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FINAL
ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL IMPACT STATEMENT
FOR THE
HAYDEN HILL PROJECT
LASSEN COUNTY, CALIFORNIA

VOLUME II

September 1991

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HAYDEN HILL PROJECT LASSEN COUNTY, CALIFORNIA

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VOLUME II

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CHAPTER 12.0

COMMENT LETTERS AND RESPONSE TO COMMENTS

12.0 COMMENT LETTERS AND RESPONSES

12.1 Introduction

In conformance with CEQA Guidelines, 14 CCR Section 15132 and NEPA regulations at 40 CFR Section 1503.4 (b), this Chapter contains the full text of all comments received on the Draft EIR/EIS and written responses to these comments. Table 12-1.1 is a listing of all comment letters received. Each letter has been assigned a number. This number can be found in the first column on the left side of Table 12-1.1. Following Table 12-1.1, the letters and responses are provided. The letters are shown on the left side of each page with the corresponding responses to the letter on the right side of the page. Reference numbers have been provided to correlate the comment with the response. The reference numbers are three number chains. The first number refers to the letter number from Table 12-1.1. The second number refers to the page number within a given comment letter. The third number refers to the paragraph number on a page. The correct response to a comment can be identified by matching the numbers on the left side of the letters with the numbers on the left side of the responses.

The responses to the comments were prepared by the Joint Steering Committee with input provided by the Agency Resource Specialists and the subcontractors who had provided material for the Draft EIR/EIS. In cases where the Project design on Proposed Action were questioned, LGMI provided input for the response. The term "we", as used in the responses which follow, refers to the Joint Steering Committee.

TABLE 12.1-1
LIST OF COMMENTORS AND REFERENCE NUMBERS

Reference Number	Commentor
1	Lassen Gold Mining, Inc.
2	Office of Planning and Research
3	Department of Fish and Game
4	Department of Food and Agriculture
5	State Lands Commission
6	Organized Sportsmen of Lassen County
7	Sierra Club, Arcata (Susie Van Kirk)
8	Sierra Club, Shasta Group (Carl Weidert)
9	Sierra Club, California/Nevada RCC Mining Committee (Stan Haye)
10	Leroy Rice
11	Jerry Parks
12	Fall River-Big Valley Cattlemen's Association, Inc. (Steven Knoch, President)
13	Ed Albaugh
14	Kenneth L. Jackson
15	Susanville School District (Marshall Leve, Jr.)
16	Don Bardella
17	Junior and Gerta Elzea
18	Martin Balding
19	Law Office of Roger Beers (Trent Orr on behalf of Larry Newhall, Natural Resources Defense Council, and the Wilderness Society)
20	US Fish and Wildlife Service

TABLE 12.1-1 (continued)
LIST OF COMMENTORS AND REFERENCE NUMBERS

Reference Number	Commentor
21	Soil Conservation Service
22	Julie Rechin
23	Linda Lopez
24	Department of Health and Human Services
25	David Burns (on behalf of the Napoles family)
26	Lassen County Cattlemen's Association
27	Steve Main
28	Department of Conservation
29	EPA
30	Bureau of Mines
31	National Park Service
32	Central Valley Regional Water Quality Control Board
33	Lassen County Farm Bureau
34	Air Resources Board
35	Law office of Roger Beers (Trent Orr on behalf of Larry Newhall, Natural Resources Defense Council, and the Wilderness Society) comments submitted in response to the Resource Plan

Explanation: This table lists each commentor. It is organized in order of receipt at the Lassen County Planning Department. The reference numbers also correspond to letter numbers and comment numbers in this chapter.

Lassen Gold Mining, Inc.

A SUBSIDIARY OF

AMAX GOLD INC.

RECEIVED

MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

May 25, 1991

Merle Anderson
Lassen County Planning Department
707 Nevada Street
Susanville, CA 96130

Dear Merle:

Lassen Gold Mining Inc. has reviewed the various mitigation measures proposed in the Draft Environmental Impact Report/Environmental Impact Statement for the Hayden Hill Project. The following comments address the proposed measures in the order presented in Table 1 of the EIR/EIS.

MITIGATION MEASURES

SOILS

LCMI believes that the use of substrate materials, removed during preproduction stripping, for placement on surfaces prior to reapplication of growth medium (topsoil) is unnecessary. Based on observations of existing site disturbances and the abandoned heap leach pad at Hayden Hill, successful revegetation can be expected from reseeding with suitable topsoil materials without 'layering' substrate and topsoil. This would be evaluated in the onsite reclamation research to refine practices and techniques, but until proven necessary, we do not think that the 'layering' should be a proposed mitigation measure.

VEGETATION

Based on observation of historical disturbances in Jeffrey Pine/Mountain Shrub vegetation, it appears that many desirable plant species - including Jeffrey Pine, Mountain Mahogany, and mountain brome - quickly colonize disturbed sites in the Hayden Hill area. It is entirely likely, since Jeffrey Pine is able to grow well in harsh sites, that the Jeffrey Pine/Mountain Shrub vegetation may re-establish and provide commercial timber levels of production. A monitoring program would be appropriate to assess this. The planting of 500 Jeffrey Pine seedlings per acre

1-1-2 Comment acknowledged. The layering process was suggested as a possible measure of conserving topsoil stock in the unlikely event that topsoil volumes were insufficient to satisfy the 12-inch topsoil goal, and not as a means of restructuring the soil profile.

1-1-3 A voluntary monitoring program for this concern is welcome. However, mitigation requirements could not be reduced until sufficient data were produced upon which to base a decision.

Merle Anderson
Page 2 of 6
May 25, 1991

is inappropriate. The California Department of Forestry recommends planting densities, for similar sites, of from under 200 to nearly 300 seedlings per acre. A more appropriate mitigation measure would be to specify densities based on local forestry experience. Additionally, planting should be restricted to suitable slopes, rather than all areas.

From a safety standpoint, revegetation activities proposed for the pit and waste rock dump should be qualified to be implemented only where appropriate and without significant risk to employees.

Habitat loss from vegetation disturbance and removal should be considered temporary. Planned reclamation, when implemented, will result in vegetation establishment on most disturbed areas. Additionally, reclamation of past disturbances at Hayden Hill would be a 'beneficial' effect.

Table 3.4-1 should be corrected to read such that the species listed under "Native Grassland" are from samples made in 'wetland areas' and not 'grasslands'. The narrative description of 'grassland' vegetation in section 3.4.2.4 is correct - the Table needs to be changed.

WILDLIFE AND AQUATIC BIOLOGY

It has not yet been established that mine activities will result in the loss of sage grouse at Hayden Hill. Therefore, monitoring of Project effects, passive luring, and habitat enhancement activities is necessary prior to determining impacts. Habitat enhancement may be the creation of grassland or wetland areas which are functional without additional input from artificial sources. Management of livestock grazing by the Project is only possible on those lands owned or controlled by the Project. Also, on page 4-43, the statement "Enhancing wetland areas will be enhanced..." is confusing and needs to be corrected.

Concerning management of grazing at the Project's Preston Canyon property (the former Anderson Ranch), it is more appropriate to design a management program which addresses wildlife habitat values and forage production (for wildlife and livestock) rather than simply for one species of wildlife - deer. Through its Conservation Agreement with the Pit Resource Conservation District, Lassen Gold is working with the U.S. Soil Conservation Service and the Pit RCD to develop a Habitat Management Plan for the property. This plan is being prepared to meet the goals of habitat value and forage production maintenance, enhancement, and creation.

- 1-2-1 As recommended by the State, the Reclamation Plan (Appendix E) has been revised to require 150 Jeffrey pine seedlings per acre reclaimed in specific areas.
- 1-2-2 A statement to this effect has been added to Section 2.2.11.
- 1-2-3 We believe habitat loss was fairly analyzed in the document. The beneficial effect of reclaiming the present disturbance was noted in Section 4.2.4.2 of the Draft EIR/EIS.
- 1-2-4 The correction has been made.
- 1-2-5 The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond leak. Counts will be done in July and August of 1991 to check on breeding success. A winter count will be done in February 1992 to check on wintering resident or migratory population. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. A Habitat Mitigation Plan is located in Appendix I. This plan specifies mitigation measures for sage grouse. The statement on page 4-43 of the Draft has been clarified.
- 1-2-6 Comment acknowledged.

Merle Anderson
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May 25, 1991

-3-1 The placement of downed logs and snags during reclamation is prudent to provide certain habitats. However, the density of 5 logs and 1.5 snags per acre is excessive and potentially wasteful of timber resources. A more appropriate approach would be for LGMI to work with the Forest Service and Bureau of Land Management to establish these woody habitats based on available log resources at the time of reclamation. Density of placement would be based upon research current at the time of reclamation.

-3-2 Again, LGMI can only manage grazing on lands it controls. Therefore, the proposed mitigation measure of ensuring that "riparian areas are protected from livestock disturbance" may be impractical to apply in the project area. Additionally, it is possible to graze livestock and maintain and improve riparian habitat - through the use of proper grazing management practices.

-3-3 The Project should be allowed sufficient flexibility in the design of the road crossing of Willow Creek to meet construction constraints at the site. Extension of the existing culvert is the most appropriate engineering design for the site. Significant deviations from this approach would result in substantial adverse impacts to the aquatic and riparian environments as well as the transportation corridor.

-3-4 Solutions bearing cyanide and open to the environment, e.g. without netting, will be reduced to concentrations which are not lethal to waterfowl and shorebirds. Netting for exclusion of wildlife has proven effective at mining and processing facilities where such installations are properly installed and maintained.

-3-5 Reduction of the use of private vehicles through the Project's use of vans for worker transportation should be considered as a effect which reduces vehicle-wildlife incidents to a level of "not significant" rather than "unknown". The use of vans for transportation is of benefit in reducing effects to wildlife, noise, and air quality due to diminishing the number of trips related to Project.

WATER RESOURCES

-3-6 Heap leach operations require the flexibility to use both drip emitters and spray emitters for solution control. The requirement of the use of evaporation minimization methods at all times eliminates the ability to adjust solution volumes, apply solution in a manner suitable to the season, and affects solution application and distribution efficiency.

1-3-1 During reclamation, 150 seedlings per acre will be planted on the waste rock dump benches. Downed logs and snags will be placed on the waste rock dump as they become available. The Reclamation Plan located in Appendix E also discusses this information.

1-3-2 Comment acknowledged.

1-3-3 All impacts must be taken into consideration along with construction constraints. That is why the CDFG, USFWS, Caltrans and the County Road Commission are all involved in this environmental/engineering design challenge.

1-3-4 Comment acknowledged.

1-3-5 Comment acknowledged. This information has also been added to Section 4.2.5.2 to show a lowered potential for roadkill.

1-3-6 Comment acknowledged.

Merle Anderson
page 4 of 6
May 25, 1991

1-4-1 Any water accumulated in the pit would be used in dust suppression activities or used for mill make-up water. The water would not be released to ephemeral watercourses or other water bodies.

1-4-2 LGMI believes it is premature to require the elimination of solution ponds at the time of abandonment. The ultimate requirements will be stipulated by the Regional Water Quality Control Board. It is currently proposed that at least some of the ponds be used as sediment detention facilities at closure.

1-4-3 A separate Contingency plan for the tailings impoundment and the heap leach pad is probably unnecessary. Waste Discharge Requirements prepared by the Regional Water Quality Control Board will likely address such measures. Additionally, LGMI operation manuals also have monitoring and response measures for all facilities.

AIR QUALITY

As a point of clarification, the term "matte" (in relation to the filter press) should be replaced with "zinc precipitate."

SOCIOECONOMICS

1-4-5 LGMI believes that there have been several changes in the employment picture in the Project region. Notably, with the closure of Clearpine Products in Nubieber and layoffs at Big Valley Lumber in Bieber, unemployment in Big Valley has increased significantly. Revisiting some of the findings of the socioeconomics study conducted in 1990 seem appropriate.

1-4-6 Mitigation measures are proposed to address the supposed effects of "non-local construction workers camp[ing] at the Willow Creek Campground." The majority of construction workers would not be LGMI employees, but rather employed by LGMI's contractors. LGMI's authority to determine where they live is limited. LGMI also questions whether "construction workers" would have greater impact to a campsite than other users - campers, bus tourists, hunters, etc.

1-4-7 It is our belief that we will be able to exceed the 53% area hiring rate on which much of the socioeconomic analysis was based. With the more than 1100 resumes currently on-hand at LGMI and the skill level of these applicants, we will likely be able to hire more than the 110 area residents suggested in the EIR/EIS. We recognize the fact that few area residents have extensive mining experience. Therefore, our projected hiring timelines have taken into account the need for mining-specific

1-4-1 Comment acknowledged.

1-4-2 After operations cease, the functional ability of all sediment control structures will be monitored and maintained on a semi-annual basis, or as appropriate to satisfy regulatory criteria. Monitoring and maintenance operations are anticipated to continue until water quality can be shown to meet NPDES permit requirements with no additional treatment. At this time the NPDES permit will be terminated. The CRWQCB will ultimately stipulate when and if sediment ponds are reclaimed. Please also refer to Sections 4.2.6.2, 4.2.6.3, and 4.2.6.5.

1-4-3 Comment acknowledged.

1-4-5 Comment acknowledged. Section 4.2.8.12 has been revised and Section 4.2.8.13 has been added to address these concerns and update the socioeconomics section.

1-4-6 There is a potential for competition between recreational users and Project construction workers for camp sites at the Willow Creek Campground. This is considered a short-term impact which would no longer exist after Project construction is completed. Long-term usage of local campgrounds by project-related workers could be discouraged through the strict enforcement of USFS 14-day stay limits.

1-4-7 Comment acknowledged.

Merle Anderson
Page 5 of 6
May 25, 1991

training and we have developed programs to facilitate this. We feel that this affirms our commitment to emphasize local hiring whenever possible.

1-5-2

Negotiated compensation for effects to education and law enforcement programs is a difficult issue to address. At a minimum, LGMI feels that it is only appropriate that possible compensation be negotiated based on what the effects related to the Hayden Hill Project actually are. Detailed monitoring of impacts is necessary to determine what is project-related and what is attributable to other sources such as the California Correctional Center, Walmart, or others. We, therefore, object to any "negotiated compensation" without thorough monitoring and analysis to establish source of effect.

LAND USE

1-5-3

It is unclear as to who is to develop the "comprehensive range management plan" proposed as mitigation for effects to grazing resources. Development and implementation of a range management plan, because of the agencies and private lands involved, is probably best addressed through the Coordinated Resource Management and Planning approach. LGMI suggests that the Pit Resource Conservation District take the lead in developing the plan. LGMI would support such an effort and gladly participate in the leadership of the CRMP undertaking.

VISUAL RESOURCES

1-5-4

The mitigation measure stating that "care will be taken to provide optimum" revegetation conditions on the dump should be qualified to include practical, feasible, and economic considerations. As it now stands, there would be simply the requirement to develop the dump to facilitate revegetation without consideration as to whether the techniques were technically feasible, cost of the practices, impacts associated with such development, geotechnical stability, public safety, and the practicality of only one design consideration.

1-5-5

It is unclear what is intended by the two mitigation measures suggested to address the uniformity of benches and the uppermost portion of the highwall. Clarification of the proposed measures is needed prior to our agreeing to implement the measures.

1-5-2 Comment acknowledged.

1-5-3 Comment acknowledged. Section 4.2.9.6 has been revised.

1-5-4 Section 4.2.11.3 has been revised to provide more detail.

1-5-5 Section 4.2.11.3 has been revised to provide more detail.

Merle Anderson
Page 6 of 6
May 25, 1991

NOISE

1-6-1 Office of Surface Mining regulations are not appropriate to this Project in relation to noise. The mitigation measure concerning air blast and vibration should be adjusted to reflect Lassen County's noise regulations.

ALTERNATIVES

1-6-2 It should be emphasized that the No Action alternative results in no economic, social, cultural resource information, nor reclamation benefit to the county, state, and country. The Hayden Hill Project will provide an opportunity for development of a more diversified economy which will be of great benefit to the region, develop hidden mineral resources, and contribute to the generation of wealth for the region, California, and the nation.

Thank you for the opportunity to provide these comments and suggestions on the Draft EIR/EIS for the Hayden Hill Project.

Sincerely,

L. Hansen
Larry Hansen
General Manager

cc: John Bosworth, BLM Susanville
Randy Sharp, USFS Alturas
Harry Carson, Amax Gold Inc.

1-6-1 Although OSM standards for noise do not directly apply to this Project, the criteria established by the OSM may be used to analyze the potential impacts of blasting noise.
1-6-2 Comment acknowledged.

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
 SACRAMENTO, CA 95814
 May 24, 1991



RECEIVED

MAY 28 1991

MERLE ANDERSON
 LASSEN COUNTY
 707 NEVADA STREET, ROOM 236
 SUSANVILLE, CA 96130

LASSEN COUNTY
 PLANNING DEPT.

Subject: HAYDEN HILL GOLD VENTURE
 SCH # 89020079

Dear MERLE ANDERSON:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

"a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation. These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Russell Colliau at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
 Deputy Director, Permit Assistance

Enclosures

cc: Resources Agency

2-1

12-10

Memorandum

To : 1. Projects Coordinator
Resources Agency

2. Mr. Robert K. Sorvaag
Director
Lassen County Planning Department
707 Nevada Street
Susanville, California 96130

From : Department of Fish and Game

Date : May 21, 1991

RECEIVED
MAY 28 1991
LASSEN COUNTY
PLANNING DEPT.

Subject: SCH 89020079 - Draft Environmental Impact Report/Environmental Impact Statement (DEIR/DEIS) for Hayden Hill Project, Lassen County

The Department of Fish and Game (CDFG) has reviewed the DEIR/DEIS (hereafter, DEIR) for the subject project. This proposed project site is located on approximately 2,800 acres of private, Bureau of Land Management (BLM), and U.S. Forest Service (USFS) land. The project would utilize cyanide heap leach and conventional milling technology to recover precious metals from a shallow epithermal deposit. Between 80 million and 100 million tons of ore, overburden and other material would be removed over a 7 to 10 year project life. The subject DEIR was prepared under the direction of the County of Lassen and BLM as joint State and Federal lead agencies, respectively. Lassen Gold Mining, Inc. (LGM), a wholly owned subsidiary of AMAX, Inc., is the proposed operating company.

The CDFG also has reviewed the Draft Hayden Hill Resource Plan, an amendment to the General Plan prepared by Lassen County to provide updated guidelines for the development of mineral resources at Hayden Hill. The Resource Plan contains goals, policies and objectives specifically for development of mineral resources within the overall goals of the General Plan and text changes which are required to achieve consistency between the General Plan and the Resource Plan. The plan contains a Resource Inventory describing the existing conditions in the Hayden Hill Planning Area and vicinity. The Inventory is followed by seven plan elements, six required by zoning law and General Plan Guidelines and an optional Mineral Resources Element. A summary of the Draft Resources Plan and an assessment of its environmental impacts are contained in Chapter 5 of the DEIR.

The proposed amendments to the Lassen County General Plan, 1990, include addition of a Significant Mineral Resource Area designation to the Natural Resource Conservation Element. Adoption of the Hayden Hill Resource Plan would automatically amend the Lassen County General Plan Map to place a Significant Mineral Resources Area designation on the Hayden Hill Planning Area. Existing General Plan land use designations for Hayden Hill are General Forest Environment, Grazing and Sagebrush Environment, and Prime Recreation Area.

3-2-4 NEPA regulations, at 40 CFR 1502.21, and CEQA Guidelines, at 14 CCR 15150(b), state that this type of material can be incorporated by reference to limit the bulk of the EIS/EIR. Section 2.2.8.12, page 2-38, of the Draft EIS/EIR states, "The Emergency Response Plan and Spill Prevention and Control and Counter Measure Plan are on file with the Lassen County Planning Department." In addition, the CDFG was sent a draft SPCC/ERP in February 1991. Their comments and suggestions were incorporated into the current ERP/SPCC. This document is included in Appendix L.

3-2-5 Impacts to water resources are presented in Section 4.2.6. The MCP (Appendix D) outlines monitoring requirements for seeps and springs within the Project area.

As stated in Section 4.2.4.2, a total of 6.55 acres of wetlands, 80 lineal feet of permanent stream channel and 1,315 lineal feet of intermittent stream channel would be impacted by the Proposed Action. These impacts are considered long-term for habitat value and short-term for cover value since reclamation would include these areas. A mitigation plan for impacts to wetlands has been prepared by the Applicant in conjunction with the Corps of Engineers 404 Permit.

The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. The proposed mitigation plan will create approximately 18.5 acres of seasonally inundated wetlands. Refer to Section 4.2.4. and Appendix I.

According to field data, there are six springs located within the Project boundary which demonstrate observable flow. Three of the unnamed springs located in Letterbox Canyon, display flow volumes not large enough for measurement. The other three springs are located along Hayden Hill Road. Daisy Dean Spring has an estimated average flow of 1 to 2 gpm. An unnamed springs in the same drainage has an estimated seepage rate of 1 gpm. Indian Springs has an estimated average flow of 3 to 5 gpm. The flows from these springs subside to negligible volumes during the dryer summer months and in some cases dry up completely.

The flows from major springs in the Project area, such as Daisy Dean and Indian Springs, are not anticipated to be affected by Project operations. The springs are located in areas hydrogeologically separated from the minor seeps and springs around Hayden Hill.

The Applicant has committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project to return these re-routed waters to the subsurface.

1. Projects Coordinator
2. Mr. Robert K. Sorvaag
May 21, 1991
Page Two

Overall, the DEIR for the Hayden Hill Project appears to be reasonably complete. However, many fundamental issues relating to this proposed project need to be resolved before the final document is certified and permits are issued. These concerns mostly relate to description of proposed project impacts, the adequacy of mitigation, reclamation, and discussion of the risks to wildlife associated with exposure to cyanide.

The Draft Resources Plan contains inaccuracies, generalizations and questionable assumptions. The Plan is vague and lacks substantive provisions that would guarantee any degree of protection for the biological resources in the Hayden Hill Planning Area. Numerous "escape clauses" weaken the Plan's environmental protection provisions and negate the intent of the General Plan amendments. The Plan does not accomplish the stated purpose of providing an inventory of existing resource conditions at the site.

Our comments on the DEIR are presented here as general summary comments. Additional specific comments on the DEIR and the Resources Plan, keyed to section, page, and paragraph in the text, are included as an enclosure to this letter.

GENERAL COMMENTS

- 3-2-4 1. The Emergency Response Plan (ERP) and Spill Prevention, Control and Countermeasure Plan (SPCC) were produced under separate cover dated February 1991. These documents are referred to frequently in the DEIR and should have been circulated to interested agencies and individuals. The DEIR does not indicate where they can be reviewed. The CDFG has not yet reviewed these drafts. However, CDFG has basic response functions under numerous sections of State law and should be directly involved in toxic materials issues that could affect fish and wildlife. We are especially concerned about potential hazardous materials spills in and near the Pit River, Eagle Lake and the Susan River.
- 3-2-5 2. Changes in surface water distribution can affect fish and wildlife abundance and distribution. Because the project site is located in a somewhat arid environment, virtually every existing water source has wildlife dependent upon it. Impacts to surface springs and seeps due to any project-related disruptions or pollution of near-surface ground water should be clearly documented and mitigated where necessary. This should be fully covered in the Final EIR/EIS.

- 3-3-1
- Impacts to A. Flagellaris are discussed in Section 4.2.4.2. Further research (Bio-Resources, May 1991, Addendum, Antennaria Flagellaris at Hayden Hill, California) indicates the 20% estimate is correct for the known population. However, the large amount found in the studies were located in easy access areas, adjacent to roadways. Large tracts of land remain unsearched. If the area searched and numbers found are correlated to the available habitat unsearched, the population is estimated to be quite large. In addition another population of equal size and density was located near Silva Flat. We believe the impact to this species is insignificant based on the present research, and that additional study is unwarranted. It is not the policy of any of the involved agencies to transplant threatened or endangered species. Protection is the key in these cases. We believe the impacts to these species have been adequately avoided and minimized as addressed in Section 4.2.4. Due to the measures included in the soil erosion and sediment control plan (included in the Reclamation Plan, Appendix E) sediment impacts to Lower McBride Springs, and the drainage as a whole will be lower than what presently exists. No impact is anticipated to this area.
- 3-3-2
- The wildlife impacts and mitigation Sections 4.2.5.2 through 4.2.5.6 have been revised.
- 3-3-3
- There is a potential for competition between recreational users and Project construction workers for camp sites at the Willow Creek Campground. This is considered a short-term impact which would no longer exist after Project construction is completed. Long-term usage of local campgrounds by project-related workers could be discouraged through the strict enforcement of USFS 14-day stay limits.
- 3-3-4
- CDFG and the Applicant, LOMI, have developed Wildlife and Habitat Mitigation Management Plan (HMP). The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The pond lek will not be destroyed for two years according to the mine plan. Passive relocation attempts will be made during those years. The Mitigation Plan states that if the sage grouse relocation plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

1. Projects Coordinator
2. Mr. Robert K. Sorvaag
May 21, 1991
Page Three
- 3-3-1
3. Two Significant Natural Areas (SNAs) previously identified by CDFG may be impacted by the proposed project. One is near Lower McBride Springs on Willow Creek (IAS-003). The other is the population of Antennaria flagellaris in section 1, T36N, R9E (IAS-004). The first may be impacted by the project and the second will be eliminated by the proposed project. The implications of impacts to SNAs should be reviewed with Mr. Marc Hoshovsky, in the Biodiversity Section of CDFG's Natural Heritage Division at (916) 322-2446 in Sacramento, and be discussed in the Final EIR/EIS.
- 3-3-2
4. CDFG's Wildlife Protection function is concerned about the potential for inappropriate activities of persons associated with the proposed project. This includes possible actions inside the State game refuge, possible materials spills, direct take or loss of fish and wildlife, adverse or accidental actions of vendors and contractors supplying hazardous materials to the proposed project, and any other actions related to the project that are subject to the California Fish and Game Code or Title 14 of the California Code of Regulations. The project proponents should contact Regional Patrol Inspector Wayne Klein at (916) 225-2361 to consult on these issues.
- 3-3-3
5. The Willow Creek and Rush Creek USFS campgrounds should be categorically excluded from use by contractors, construction employees, and any other employees or vendors whose presence is caused by the proposed project. These campgrounds are fully utilized during deer season and have no room for additional project-related "campers". Use of these facilities is regulated by Modoc National Forest and they have time limits for users.
- 3-3-4
6. Sage grouse will be significantly impacted by the proposed project and will require adequate mitigation. The population on site is restricted to two (2) known strutting grounds (leks), both of which will be lost to the proposed project. The only mitigation proposed in the DEIR includes relocation of the leks by passive relocation of male sage grouse and unspecified habitat improvements. If the project were to begin in late 1991 or early 1992 the only opportunity to attempt to relocate the leks would be spring of 1991. As of May 3, 1991, it is our understanding that the relocation attempt has failed. Since the entire grouse population depends on these leks for reproduction, it appears that the local population will eventually be extirpated if the leks are destroyed in early 1992 and other suitable sites are not available.

1. Projects Coordinator
2. Mr. Robert K. Sorvaag
May 21, 1991
Page Four

3-4-1

In June 1990, the local CDFG wildlife biologist advised LGMI and their consultants that it was doubtful the proposed relocation would be successful. CDFG also advised that project mitigation for impacts to sage grouse would require serious consideration of enhancement of off-site populations because it was unlikely that there was enough flexibility to obtain compensation with the local population. Existing populations that could be enhanced to compensate for anticipated project-induced losses are available in other Lassen County locations. These populations are not in close proximity to industrial sites and thus not exposed to potentially toxic materials or other sources of mortality (new roads and fences, etc.). Because the relocation attempt has failed it will now be necessary to consult further with CDFG. This consultation will emphasize what can be salvaged from the on-site population and what measures are needed to fully mitigate project impacts on sage grouse.

3-4-2 7.

Exposure of wildlife to cyanide and other toxic substances are important considerations for the proposed project. Cyanide solutions can be clearly fatal to wildlife as has been recorded at other similar projects.

3-4-3

Our understanding of current U.S. Fish and Wildlife Service (USFWS) recommendations regarding losses of migratory birds at industrial cyanide related operations is that any losses will be considered illegal take under the U.S. Migratory Bird Treaty Act. We agree with the USFWS position that is not meaningful to measure exposure conditions based on cyanide concentration. We do not endorse any "safe level" for cyanide exposure. Instead, enforcement of measures to protect wildlife will be based on actual bird losses. CDFG's mandated enforcement of these Federal and other applicable statutes will rely on random, unannounced spot checks of losses, records of losses, and compliance with other mitigations.

3-4-4

The proposed mesh size (2") for netting toxic ponds on site will allow many species of birds and mammals to pass through the netting. An estimated 38 percent of mammal species and 58 percent of bird species listed in the DEIR will be able to pass this mesh size. We strongly recommend that the project proponents adopt the closed cyanide system as a proposed action or, alternatively, to use the floating cover design. As a third choice, the mesh size should be reduced to 1" and designed accordingly.

3-4-1 Please see response 3-3-4 on previous page.

3-4-2 Comment acknowledged.

3-4-3 Comment acknowledged.

3-4-4 In the Habitat Mitigation and Management Plan, Appendix I, the Applicant agrees to use 1" netting on all solution process ponds, inspect netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2 Cyanide in Wildlife; 2.2.8.13, Sodium Cyanide; 2.3.1.7 in the Proposed Action; and 4.3.7 Enclosed Cyanide System Alternatives, have been revised to address this concern. Properly maintained netting and detoxified tails have proven effective in minimizing wildlife mortalities at many operating Nevada mines. (King and Lamp 1991).

1. Projects Coordinator
 2. Mr. Robert K. Sorvaag
- May 21, 1991
Page Five

3-5-1

Cyanide solution emitters on the leach pads should be drip, not spray. While some rationale for both types is included in the DEIR, it is not entirely clear which type(s) is(are) being proposed. An additional concern at the heap leach pads is the puddling that can occur if spray emitters are used. This puddling can attract birds and could be eliminated if a drip system is used or if the ore is evenly smoothed when it is deposited. This should be discussed in the Final EIR/EIS.

3-5-2

We recommend the use of enclosed heap leach pad drains to convey cyanide solutions back to the processing site. This would provide additional protection of wildlife from exposure to cyanide.

3-5-3

The type and location of fences to be constructed should be specified in the Final EIR/EIS. Two criteria are particularly important: (1) at those sites where the intent of fencing is to prevent wildlife access to toxic material, fencing must be designed to exclude wildlife capable of jumping up to eight feet, such as deer, and (2) at those sites where passage of wildlife is expected to occur, fences must be designed to provide easy passage. The latter concern extends to low flying birds that are prone to collisions with new fencing, such as greater sandhill cranes and sage grouse, as well as animals subject to fence entanglement such as pronghorn antelope. Some suggested fencing specifications are included in the comments below.

8.

3-5-4

Noise and disturbance from blasting has the potential to severely disrupt wildlife oriented recreation and the use of otherwise available habitat by a variety of wildlife. The DEIR does not present sufficient data to support the conclusion that noise will have no demonstrable effect on wildlife. Further, some portions of the DEIR contradict other sections regarding blasting impacts, presenting neither conclusive data nor acceptable mitigation.

At a similar large-scale project nearby that also has done considerable blasting, the Muck Valley hydroelectric project, significant declines in nearby antelope usage has been observed since the project began. The Muck Valley project site has experienced an order of magnitude decline in antelope use since 1987; the population using the valley within 2 miles of the project has declined from about 50 to about 5.

3-5-1

Please refer to Section 2.2.3.2. Leach Solution Application System. The ore will be placed by conveyors which results in a heap with higher infiltration rates than "equipment placed" ore; thereby minimizing ponding potential. Solution application rates will be adjusted to eliminate any ponding. The Final EIR/EIS indicates that the Applicant is proposing to use both spray and drip to obtain the benefits of each.

3-5-2

Please refer to Section 2.2.3.2. Solution Collection System and Containment Ponds. The pregnant solution flows will be in enclosed pipes.

3-5-3

Sections 2.2.8 and 4.2.5.2 have been revised to specify netting and fencing requirements for wildlife protection. The goal is to maintain overall existing mule deer and pronghorn migration patterns through the area, while preventing access to solution ponds.

3-5-4

There is no conclusive information regarding the effects of noise such as blasting, on wildlife. Several field studies have concluded noise disturbance minimally affects wildlife. A synthesis of these studies noted the uncertainties of the effect of sonic booms on wildlife, and concluded there were no known quantifiable effects. Noise from blasting is not expected to have a significant adverse effect on wildlife, as no quantifiable effects upon wildlife can be ascribed other similar noise exposure. Therefore, operational noise levels resulting from blasting, machinery, and other mine operations is anticipated to have no measurable adverse impact on wildlife beyond the boundaries of the Project. Section 4.2.14.2 has been revised to address noise concerns (notably the potential of noise impacts on wildlife).

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Because no other regional antelope population in northeastern California is declining in a similar pattern, we assume that the declines are from blasting, noise and other project-related disturbances at the Muck Valley site. We consider this to be a cumulative and significant impact of the proposed project under California Environmental Quality Act (CEQA) and are concerned that a similar pattern will take place at the Hayden Hill site without substantial mitigation. More antelope are at risk from these disturbances at Hayden Hill than at Muck Valley. We believe the Final EIR/EIS must address this. Please see the enclosed graph comparing baseline populations between sites.

9. Wetlands impacts identified in the DEIR will require compensation. While mention of a wetlands mitigation plan is made in the DEIR, none is presented. A fundamental expectation of CDFG, over and above U.S. Army Corps of Engineers (COE) guidelines, is that wetlands mitigation sites will support most of the species of plants, birds, and animals that occupied the lost wetlands. We assume that CDFG will play a substantial role in the wetlands mitigation process. It is CDFG's policy to oppose projects that will impact wetlands unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat value or acreage.

10. The loss of the low sagebrush habitat type will be a significant impact of the project. It is an important component of pronghorn antelope and sage grouse habitat. As partially explained in the DEIR, its geotechnical structure and clay durapan substructure cannot easily be reconstructed by reclamation. While loss of low sage habitat is considered significant in some portions of the DEIR, other portions explain that it cannot be successfully reclaimed but that its loss is not significant. Other portions of the DEIR explain that nearby low sage sites will be enhanced but do not explain where or how.

11. The DEIR commits both the BLM and USFS to minor off-site wildlife habitat improvements but does not specify where or how these will take place. The existing land use documents that establish goals and permitted uses of these lands will have to be amended to include these project mitigations and changes in land use. The South Adin Management Plan of the Modoc National Forest contains several goals and objectives that cannot be met by any other proposed project action

- 3-6-2 See response to 3-2-5. Appendix I includes the wetlands mitigation plan. Wetlands impacts are mitigated at about 3:1.
- 3-6-3 Section 4.2.5.2 states the impacts to low sagebrush habitat as significant under the sage grouse and pronghorn subsections. Section 4.2.5.6 has been revised to include low sagebrush habitat loss as unavoidable. Mitigation for this loss is specified in Section 4.2.5.4. The goal of the mitigation is to maintain and enhance 355 acres of low sagebrush habitat adjacent to the Project area, to replace sage grouse and pronghorn habitat. The Habitat Mitigation Plan is located in Appendix I.
- 3-6-4 Section 4.2.5 mitigation has been revised. Mule deer mitigation is proposed on USFS land; no other mitigation measures are included on agency lands.

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except as project related wildlife mitigations. The Modoc National Forest and BLM should welcome these opportunities to improve wildlife habitat while mitigating project impacts.

3-7-2

12. The growth-inducing impacts of the new electrical power supply for the proposed project are well discussed in the DEIR. However, there is no proposed mitigation except that the alternative of LGMI owning the line and not reselling power is presented but is considered not feasible. The DEIR states that growth inducement from the power line could serve 182 existing parcels that are not currently developed. This is a significant aspect of the project under CEQA and will require mitigation. We strongly urge the adoption of the company-owned power line alternative with the stipulation that power will not be resold at some future time and that the new line will be removed at the end of the project.

3-7-3

13. The DEIR indicates that the benching alternative for the waste rock dump is the alternative preferred by the joint Federal lead agencies. This is because of reduced soil erosion potential and greater reclamation potential for the Jeffrey pine/mountain shrub plant community with benching. CDFG strongly urges adoption of this alternative for the same reasons and does not agree with the proposed action.

3-7-4

14. The reclamation plan appears to be internally contradictory in that it states that all plant communities will be reclaimed whereas other portions of the DEIR state that the low sage and Jeffrey pine/mountain shrub communities will be virtually impossible to reclaim. The reclamation plan needs to fully treat the issue of substitutions of one plant community for another. We believe that the plan as presented may eventually result in a monotypic, weedy, mountain brush and grass dominated plant community incapable of supporting the current assemblage of wildlife species. We are concerned that the reclamation plan, as proposed, precommits too much potential wildlife habitat to a much less diverse or even failure status for replacement, even though the site may eventually produce grass for livestock.

3-7-5

15. Consultation for the California threatened greater sandhill crane and California endangered Modoc sucker will be necessary under the California Endangered Species Act (CESA). Similarly, consultation under the Federal Endangered Species Act (FESA) will be necessary for the Federally-endangered Modoc sucker. The lead agencies should

3-7-2 We believe that the commentor misunderstands the discussion relevant to this alternative. There is no place in the document that states that this alternative is not feasible. The Socioeconomic and Power Supply Alternative Sections 4.2.8.9 and 4.3.5 have been updated to include this information. An EIR need not engage in a speculative analysis of environmental consequences for future and unspecified development. In addition, please see Section 2.1. Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval. See also response to Comment 3-13-6.

3-7-3

Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

3-7-4

We feel that maintaining sufficient diversity is covered adequately in the revised Reclamation Plan (Appendix E).

3-7-5

Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2, and 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.

- 3-8-2 The basic criteria for mitigation were set forth in Chapter 4.0 of the Draft. These criteria have since been updated. The revised Chapter 4.0 and Appendices D, E, G, I, L, M, and N contain the details of mitigation.
- 3-8-4 These concerns are addressed in the Mitigation Compliance Program (Appendix D).
- 3-8-5 (A) The wetlands mitigation was not included in the Draft EIR/EIS because discussions as to wetlands mitigation were continuing with the Army Corps of Engineers. It has now been completed and is included in Appendix I. This plan is available for public review through this document.
- (B) CDFG and the Applicant, LGMI, have developed a Wildlife and Habitat Mitigation and Management Plan. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 and 4.2.5.5, have been revised to reflect the contents of this plan. The Mitigation Plan is located in Appendix I.
- (C) The housing impact analysis is summarized in Chapter 4.0, Section 4.28, Socioeconomics. More detail is provided in "Socioeconomic Technical Report in Support of the EIR/EIS for the Hayden Hill Project," by Planning Information Corporation, which is on file at the Lassen County Planning Office.
- (D) All necessary threatened and endangered species consultations are discussed in the Final EIR/EIS and are available for public review through this document. Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2, and 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.
- (E) and (F) The ERP and SPCC are provided in Appendix L.
- (G) An addendum to Table 8 of the report titled "Vegetation and Wildlife at Hayden Hill, California" includes the results of the supplemental survey of the power line corridor. This document is available for public review as a referenced document in the Final EIR/EIS. Section 3.4.1 has been revised to address this information.
- (H) Section 3.5.3 has been revised to include results of the 1991 survey. The methods and field data are on file with the County and Susanville BLM office.
- (I) The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County in December of 1990, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.
- (J) We believe the information available on the herd from CDFG (Adin Deer Herd Management Plan) and the baseline studies performed by Bio-Resources are adequate. LGMI in cooperation with CDFG will continue to collect data from radio-collared deer. Monitoring will take place by seasonal and aerial counts.

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16. The DEIR consistently uses terms for mitigation which do not constitute mitigation. The following terms, which are used to describe mitigation in the DEIR, are not considered under CEQA to constitute mitigation: "a plan", "consult", "negotiate", "a permit", "monitoring", etc.
- Mitigation under CEQA requires specific statements of how and what will be accomplished, and under what time frames, to mitigate specific impacts of a project. An EIR cannot simply say that the proponents plan to resolve or mitigate a problem by some future unspecified action. This has been confirmed through considerable case law and court interpretation. The functions and definitions of mitigation are explained and interpreted in the CEQA guidelines and handbooks that are readily available. Implementation of mitigation as per Assembly Bill (AB) 3180 is covered in that bill. For general assistance in these matters you should consider contacting the California Office of Planning and Research (OPR). OPR can provide guidelines for the implementation of CEQA and related statutes.
17. The Mitigation Compliance Plan (MCP) does not include specific reference to necessary fish and wildlife mitigations to be completed as part of the project. AB 3180 should be specifically addressed as it relates to compliance procedures for project mitigations under CEQA. These should also include the provisions developed under the CESA and FESA consultation process.
18. The following plans, surveys, and baseline studies are all referred to in the text of the DEIR:
- A. Wetlands Mitigation Plan
 - B. Wildlife Mitigation Plan (stated as "Conceptual")
 - C. Housing Impact Analysis
 - D. Threatened and Endangered Species Consultation
 - E. Emergency Response Plan (ERP)
 - F. Spill Prevention, Control, and Countermeasure Plan (SPCC)
 - G. Supplemental Rare Plant Survey for Power Line
 - H. Spotted Owl Survey (as per USFS protocol)
 - I. Contingency Plan for Acid Discharge
 - J. Baseline Study for Mule Deer (appendix page I-14)

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- 3-9-1 K. Project Specific Grading Plan (page 5-8)
L. Erosion Control Plan (page 5-9)

We believe that only two of these exist (the ERP and SPCC). Have the others been prepared? If so, what is the rationale for not utilizing their content in the DEIR? Will each be available for public and agency review as part of the Final EIR/EIS? If not, why not?

- 3-9-3 In addition, please note that the CDFG believes the project is subject to a filing fee pursuant to Fish and Game Code Section 711.4 (AB 3158). If an EIR is filed by the County, the fee will be \$850, payable to the County Clerk when the Notice of Determination is filed.

We thank you for the opportunity to comment on this very important project. We look forward to the opportunity to continue to work with the project proponents and various LGMI consulting firms towards resolving the remaining project impacts. If we can provide any additional information, please do not hesitate to contact Mr. Banky E. Curtis, Regional Manager, Region 1, Department of Fish and Game, 601 Locust Street, Redding, California 96001 or by telephone at (916) 225-2363.

Pete Bontadelli
Director

Enclosures

- cc: Bureau of Land Management
Susanville, California
Modoc National Forest Service
Alturas, California
U.S. Fish and Wildlife Service
Reno, Nevada

- 3-9-1 (K) and (L) The Draft EIR/EIS included a post reclamation contour map indicating grading. The revised Reclamation Plan (Appendix E) includes this figure and a sediment and erosion control plan. These items are available in this document for public review. The erosion and sediment control plan was not included in the Draft EIR/EIS because it was not identified as necessary.
- 3-9-3 Comment acknowledged.

SPECIFIC COMMENTS ON THE DEIR/DEIS FOR THE HAYDEN HILL PROJECT

Section title or number, page, paragraph

Intro... 5.3: ".....reclaim the area to an appropriate land use." Which appropriate use? Which land uses are "appropriate"? All identified uses? Reclamation for a specific plant community to support one use (e.g., wildlife) may require the exclusion of another land use (e.g., livestock grazing) so that they both might eventually use the site in the future. This should be addressed on a case-by-case basis for the different plant communities and uses.

Intro... 9.2: Would the only exposed cyanide process solution be spray? What about drip, or would both spray and drip be used?

2.1.2-1.3: Which agency's preferred action, BLM and/or USFS? We urge the adoption of the benching alternative for the same basic reasons as the Federal agencies: the erosion potential is less and the likelihood for reestablishment of the Jeffrey pine/mountain shrub plant communities is greater.

2.2.2.2.2-6.1: "Efforts will be made..." Where are these efforts specified or described? Where are the soil horizons (A, B and O) described? Who determines, and by what methods, what are "appropriate and suitable" in the context of this section? Shouldn't these functions be based on specific objectives of the reclamation plan? The "O" horizon is defined on the next page; it should be defined when it is first used in the text.

Table 2.2-4: The materials listed in this table should be shown for both project life and annual consumption. Some explanation of how much material is actually represented by 3,000 tons of sodium cyanide, 275 tons of hydrochloric acid and 2.6 million gallons of diesel fuel should accompany the table (in truckloads, for example) so that the reader can comprehend these volumes. This should also be done for other very large volumes in the text such as the 80-100 million tons of material to be moved by the proposed project.

2.2.2.4.2-11.2: Explain the frequency and times of blasting. Is it continuous or do many hours pass between blasts? Will blasting occur 365 days a year? If so, say so.

2.2.3.2.2-16.2: "...using sprays or drip tube emitters...." Which ones will be used? (see previous comment.)

2.2.3.2.2-16.6: Where did the 4.31 inches of rain figure come from? Look at February 1986 figures for Lassen County; some 5- to 7-inch 24-hour precipitation figures were recorded.

2.2.3.2.2-17.3: Fencing and netting specifications should be briefly included at this point.

- 3-10-1 Sections 1.4, 4.2, 4.5, 7.4, 5.8, and 4.8 of the revised Reclamation Plan (Appendix E) discuss the present and post-mining land uses of the site.
- 3-10-2 The Final EIR/EIS has clarified that the Applicant intends to use both to obtain the benefits of each.
- 3-10-3 It is a preferred alternative of both the BLM and USFS. Section 2.1 was corrected to, "The agencies' preferred alternative..." Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.
- 3-10-4 Please refer to Sections 2.2.2.3.3, and 4.2.3. The upper layer of the profile, which is often designated as the A horizon or *epipedon* ("over-soil"), usually is rich in humus and organic plant residues. The subsoil immediately below the topsoil layer is called the B horizon, and it can usually be distinguished from the topsoil by a contrast in color. The O horizon typically overlies the A horizon and consists almost entirely of organic materials. Section 2.2.2.2 has been revised to incorporate these comments and questions.
- 3-10-5 Comment acknowledged.
- 3-10-6 Please refer to Sections 2.2.2.4, 2.2.8.1, and 4.2.14. Blasting operations are anticipated to be held once a day, 7 days per week, at 1200 or 1700 hours.
- 3-10-7 The Final EIR/EIS has been corrected to clarify that the Applicant is proposing to use both to obtain the benefits of each, which are described in detail in Section 2.2.3.2.
- 3-10-8 Knight and Piesold Ltd. used available historic precipitation data for areas near the site to predict the precipitation likely at site to design the heap leach and tailings facilities. Knight and Piesold also used the data to predict the 1 in 10-year, 24-hour and 1 in 1,000-year, 24-hour storm events. The 1 in 10-year and 1 in 1,000-year storms are the storm sizes based on probability functions for the stated 10-year and 1,000-year return periods. The 1 in 10-year storm for site is 2.25 inches in 24 hours, and the 1 in 1,000-year storm is 4.31 inches in 24 hours.
- The 1 in 10-year storm was used to size diversion structures. The 1 in 1,000-year storm was used to size the ponds and other facilities for stormwater storage. Use of the 1 in 1,000-year storm is well above the minimum State and Federal design requirement for a 1 in 100-year storm.
- 3-10-9 Section 2.2.3.2 has been revised to include this information.

SPECIFIC COMMENTS
HAYDEN HILL DEIR/DEIS

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- 3-11-1 2.2.3.2.2-17.5: How can wildlife be deterred from spray emitters when the area is fenced? If animals cannot walk over to see what kind of emitters are being used how could the type of emitters be relevant? If the issue is birds, say so. What levels of cyanide are present such that this could be an issue? In what capacity do drip emitters not function? Why?
- 3-11-2 2.2.3.2.2-18.3: This is the fifth reference to emitter types in the text. Now the reader is told that both types of emitters are proposed to be used. How can both types be used at once? Please see previous comments.
- 3-11-3 2.2.3.2.2-18.4: Again, the types of emitters are proposed to be one "or" the other. Which type is being proposed? Is it relevant to bird mortality or not? If not, why not?
- 3-11-4 2.2.3.2.2-18.4: Leach solution containing 250-500 parts per million (ppm) of cyanide may be "barren" of gold; it would not seem to be "barren" of cyanide.
- 3-11-5 2.2.4.2.2-26.2: The table (2.2-7) referred to shows only evaporation, not precipitation.
- 3-11-6 2.2.4.2.2-26.3: How will the operators know which runoff is contaminated and which is not? Which "natural drainage channels and sediment ponds" will be used? Where will the contaminated runoff be routed?
- 3-11-7 2.2.6.2-26.1: A "monitoring schedule" is not mitigation.
- 3-11-8 2.2.7.1.2-29.5: All of the road is subject to spills, not just that "adjacent to drainages".
- 3-11-9 2.2.8.1.2-32.4: If damage to buildings from air blast limits is a concern, wouldn't blast effects on wildlife also be of concern?
- 3-11-10 2.2.8.7.2-34.6: While black bears have not yet been observed on site, they are a depredation concern just off site. Food waste garbage should be confined in bear-proof dumpsters on site or hauled at the end of each day during both construction and operation phases of the proposed project. Please so state in the Final EIR/EIS.
- 3-11-11 2.2.8.8.2-35.1: Sheep proof fence will not prevent deer access and it can tangle pronghorn antelope. Please consult local wildlife biologists for advice on adequate fencing to achieve the specific goals and include fencing specifications in the Final EIR/EIS.

- 3-11-1 Section 2.2.3.2, Leach Solution Application, has been revised. Emitters are subject to clogging due to carbonate scaling an other solids entrained in the barren solution, also freezing at lower flow rates can cause plugging.
- 3-11-2 Mortalities could result if ponding occurs. Only operational constraints will determine which, when, and where each emitter type is used. The flexibility of using one or both emitter types is necessary to address water balance, seasonal, and solution distribution concerns.
- 3-11-3 The Final EIR/EIS indicates that the Applicant is proposing to use both to obtain the benefits of each.
- 3-11-4 In Section 2.2.3.2, Heap Leach Processing Technology, barren is defined as "metal free". In Chapter 9.0, Terms and Abbreviations, barren solution is defined as "non gold-bearing sodium or calcium cyanide solution".
- 3-11-5 This information has been included in this document. See Table 2.2.7.
- 3-11-6 The operator will be aware of the facility from which the storm water originated. Therefore, the level of contamination can be determined. The heap leach and tailings facilities drain to the process ponds via lined, constructed ditches, as part of the closed circuit. Storm water run-off from the waste rock dump will be routed via natural and manmade channels to the constructed sediment collection facilities at the bottom of the drainage. The storm water from this facility is expected to contain sediment. Refer to Section 2.2.5 for more information. Further information is contained in the "Report of Waste Discharge" CRWQCB permit application (DKP 1990c) and will be available in the NPDES storm water permit application.
- 3-11-7 Refer to Chapter 4, Environmental Consequences, for a discussion of the mitigation measures developed for this project.
- 3-11-8 Comment acknowledged.
- 3-11-9 Air blast and vibration would be controlled so as not to exceed OSM criteria at adjacent noise sensitive properties. Vibration due to blasting would be controlled to prevent damage to the mill building, which is within the Project boundary. Because vibration is reduced with increasing distance from the blast site, it is not anticipated that vibration due to blasting would adversely affect adjacent properties.
- 3-11-10 Garbage will be collected in large dumpsters and hauled to a waste facility three times a week. If bear visitations to garbage dumpsters occur, steps will be taken to deter such visitations, in consultation with CDFG.
- 3-11-11 Section 2.2.8.8 has been revised to include fencing information.

SPECIFIC COMMENTS
HAYDEN HILL DEIR/DEIS

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- 3-12-1 2.2.8.8.1. 2-35.2: Include specifications for netting here. Only a percentage of bird and mammal species on site will be prevented by the proposed two-inch mesh. See subsequent comments on this issue.
- 3-12-2 2.2.8.12. 2-37.2: The statement that "Dust from blasting and loading cannot be controlled" is inaccurate. It can be controlled when it settles. What effects on vegetation will there be from this dust?
- 3-12-3 2.2.8.12. 2-37.3: Who decides, and under what conditions, to apply the magnesium chloride, calcium chloride or other dust suppressants? These chemicals may have fish and wildlife implications. Specific dust controls should be included in the Final EIR/EIS prior to obtaining the permits.
- 3-12-4 2.2.8.12. 2-37.6: The same facilities at other cyanide heap leach mines in Nevada emit substantial dust in high winds. Explain why windblown dust will not be a problem at the proposed project?
- 3-12-5 2.2.8.12. 2-37.7: Who makes the decision as to whether the dust is "noticeable"? What, specifically, will be used to control dust and under what conditions?
- 3-12-6 2.2.8.12. 2-38.6: The SPCC and ERP should be contained in the Final EIR/EIS.
- 3-12-7 2.2.9. 2-39.5: This section should include the number of construction workers. Include in the Final EIR/EIS the number of employees who will reside on site.
- 3-12-8 2.2.11.1. 2-41.1: What plant communities are referred to in the statement "...establish long-term productive plant communities compatible with planned future land uses"? Many plant communities would qualify but few might accommodate future land uses which include the diversity of wildlife that now occupy the site. The criteria for future success needs to be more specific than "long-term productive".
- 3-12-9 2.2.11.1. 2-41.2: What land forms are anticipated "...that could constitute a public hazard"? Cliffs? Pits? If these features cause a public hazard they could also cause a hazard for terrestrial wildlife such as deer and antelope. The Final EIR/EIS should include a statement that these areas will be adequately fenced. What structures referred to won't be removed? If not, why not?
- 3-12-10 2.2.11.1. 2-41.3: If restoration of preproject natural plant communities is unlikely, please describe what is most likely to

- 3-12-1 Section 2.2.8 has been revised to include this information. A one-inch netting mesh size will be used.
- 3-12-2 The commenter's concerns are addressed in Section 2.2.8.12. The stated dust control measures of watering roadways, using a dust suppressant on the haul roads and sonic fog devices at crushing facilities will eliminate the majority of the dust. The dust from blasting and loading is not expected to be sufficient to have an effect on vegetation because the blasts will be conducted twice daily and the material blasted will contain the ambient soil moisture levels. The dust will be controlled by watering and dust suppressants. Impacts due to dust were not considered significant by agency wildlife biologists. Nevada Department of Wildlife (NDOW) personnel contacted also agreed that dust generated by mining operations is not considered to be a significant impact (King and Lamp, 1991).
- 3-12-3 The applicant will use non-toxic materials as used by the County, USFS, and private industry. The Mitigation Compliance Coordinator, who will be on site daily, will make this determination. See the Mitigation Compliance Plan (MCP) in Appendix D for dust controls.
- 3-12-4 The leach pad will be wet and is not anticipated to emit dust. The tailings will be deposited in a wetted condition and will harden as it dries due to the high lime content (Section 2.2.8.12). After Project completion, these facilities will be covered with topsoil and revegetated. See the Reclamation Plan in Appendix E for more information.
- 3-12-5 See response to 3-12-3 above.
- 3-12-6 The SPCC/ERP is included as Appendix L.
- 3-12-7 Section 2.2.9 states that short-term personnel requirements for pre-production (construction) activities are estimated to be 150 full-time employees. There will be no on-site housing. Refer to Section 2.3.3.5 for a short discussion of the option of on-site housing provided by LGMI. This alternative was eliminated from detailed consideration.
- 3-12-8 The land use and planting sections of the Reclamation Plan (Appendix E) have been revised. Refer to the entire Reclamation Plan for a response to this comment.
- 3-12-9 Sections 2.2.8 under Environmental Health and Safety, 2.2.11 and the Reclamation Plan Section 4.8.7 discuss fencing during and post-mining. The Reclamation Plan also discusses site closure by facility.
- 3-12-10 We believe the revised Reclamation Plan (Appendix E) adequately describes the post-reclamation vegetation and that it will serve the purpose of protecting the site from erosion while providing for the land use goals.

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follow? If a brushy, weedy, monotypic plant community invades the site and is less diverse than the preproject communities, describe it and describe the implications for timber, wildlife and livestock.

3-13-2 2.2.11.1.2-41.5: The document states "Reclamation efforts will be implemented at the earliest feasible time...". What criteria will be used to determine the earliest feasible time?

3-13-3 2.2.11.1.2-41.6: Include CDFG in the agencies listed in the paragraph.

3-13-4 2.2.11.2.2-43.2: What is the specific objective of leaving any roads and fences? How will the roads be "blocked"? This will be a very difficult task on nearly level ground. These roads could be restored to wildlife habitat as roadbeds often have the ability to support valuable species such as bitter brush and mountain mahogany.

3-13-5 Table 2.3-1.2-45: The table should include the alternatives for power line corridors.

3-13-6 2.3.1.5.2-50.1: This section does not say that LGMI would not offer power to other users and does not isolate LGMI from the growth-inducing impact of the power line even if they own it. The alternative is summarily rejected in Table 2.3-2 as it is not feasible to obtain the beneficial aspects.

3-13-7 3.4.1.3-18.3: Because there are only two known populations in the State, the plant species (*Haplopappus lanuginosus*) qualifies as an endangered species under CEQA. If the population is not in an area to be impacted by the project, how will its protection be assured by the project? If concern for the species is relevant enough to include it in the DEIR, then some assurances for the species' protection should be included in the Final EIR/EIS.

3-13-8 3.4.1.3-19.2: The results of the supplemental rare plant survey for the power line corridors should be included in the Final EIR/EIS.

3-13-9 3.5.3-26.4: What is the "slightly larger area" of the "site" that is included in the study area? How (where?) are its boundaries defined or mapped?

3-13-10 3.5.2.3-27.2: If the deer observed "...were not considered resident, due to a lack of adequate cover.", what should they be considered? If they are not resident, they must be migratory. The implication seems to be that even though they were observed there, the habitat is somehow not right. If they were found at the site they would have adequate cover nearby or they wouldn't

- 3-13-2 See Section 4.6.1 of the revised Reclamation Plan. This Section and the Plan as a whole explain concurrent reclamation and the timing of these activities.
- 3-13-3 The CDFG is included through Lassen County since they are advisory to the County.
- 3-13-4 Section 4.8.7 of the revised Reclamation Plan (Appendix E) discusses the fate of site roads and fencing, and the objectives of leaving any roads or fences. Please refer to this section for details.
- 3-13-5 Table 2.3-1 has been corrected.
- 3-13-6 Private power line owners are not obligated to provide power to the public. The power line will be removed after project completion from the mine site to the junction of Route A-2 and Highway 139 (Sections 2.3.1.5 has been revised to add this information). The line to the mine site will be a 69 KV transmission line. The substation needed to transform this power supply for residential use would be located at the mine site, making power accessibility to residences along Highway 139 unfeasible. The omission in Table 2.3-1 has been corrected. This alternative is not listed in Table 2.3-2. See also the response to Comment 3-7-2.
- 3-13-7 *Haplopappus lanuginosus* may qualify as threatened or endangered under CESA. However, *H. lanuginosus* is well outside of any impacted area and not near any roadways.
- 3-13-8 An addendum to Table 8 of the report titled "Vegetation and Wildlife at Hayden Hill, California" includes the results of the supplemental survey of the power line corridor. This document is available for public review as a referenced document in the Final EIR/EIS. Section 3.4.1 has been revised to address this information. No sensitive species were found.
- 3-13-9 Section 3.5.1 has been clarified. As stated in the text the Project Area is part of the study area. The study area varies by species and habitat. It is not a distinct or separate area, and, therefore, is not mapped.
- 3-13-10 The statement (deer observed considered transient due to lack of cover) in Section 3.5.2 has been deleted, and the excellent summer range statement has been added.

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have been observed there. The Snag Hill area is generally considered excellent summer range for the Adin Deer Herd. See the Adin Deer Herd Management Plan which has been quoted elsewhere in the DEIR. Delete the sentence in the Final EIR/EIS.

3-14-2 The "manzanita" vegetation identified for the Snag Hill site is largely a misidentification of snow brush or tobacco brush (*Ceanothus velutinus*) that is much more abundant there. It is excellent deer forage. Figure 3.4-2 also needs to be corrected for this species.

3-14-3 3.5.2.1.1, 3-28, 2: Is Silva Flat Reservoir included in the study area? (see comment from page 3-26, above) White-faced ibis (included here) is a species of special concern (SSC) not mentioned elsewhere in the DEIR.

3-14-4 3.5.2.2, 3-29, 1: The information presented here is also applicable to Snag Hill and should be included on page 3-27.

3-14-5 3.5.2.2, 3-29, 3: The words "Madeline Plains" should be deleted from the seventh sentence and the words "the vicinity of Mud Flat" inserted. These antelope travel to the Mud Flat area of southeastern Lassen County via the Madeline Plains but do not normally winter on the Madeline Plains. The word "fall" should be deleted from the ninth sentence and replaced with "summer".

3-14-6 Table 3.5-1, 2: For Northern harrier; delete the word "no" and add the word "exists" in the comments column. Add white-faced ibis to this table with a status of "CA SSC (1)" and "Observed, potential habitat exists" under comments. Add (1) to level notes at bottom of page "faces immediate extirpation of its entire population or its California breeding population if current trends continue" (Remsen, 1978). J. V. Remsen is the author of "Bird Species of Special Concern in California" which is cited in Table 3.5-1 and elsewhere in the DEIR. This document should be included in the bibliography. The comments under mule deer on page 3 of the table also apply to Snag Hill.

3-14-7 3.5.1.4, 3-34, 1: The May 1991 survey for spotted owls which will follow the USFS protocol that is referred to here should be included in the Final EIR/EIS.

3-14-8 3.5.1.6, 3-34: The DEIR should describe what kind of "a study" was conducted along the Highway 139 power corridor, including the number of nights and hours. What were the sampling locations and how were they distributed? Specifically, what ranges of frequencies were used for what species? The sampling tool used gives poor results if not precisely calibrated. Relevant information should be included in the Final EIR/EIS.

3-14-2 The manzanita vegetation type described is dominated by greenleaf manzanita. Minor amounts of chokecherry, snowberry, serviceberry, and rabbitbrush are part of the woody component of the vegetation. Following ecological convention, the type was named based on the dominant species in the woody stratum. Species identification has been confirmed by the BLM and LGMI vegetation specialists.

3-14-3 Silva Flat was included in a larger observation area but is not located in the Project area or study area. The White-faced Ibis pair were observed in August 1990 "visiting the pond". (Bio-Resources, 1990e)

3-14-4 Section 3.5.2 about Snag Hill has been revised to add the statement that the Gerig burn is considered excellent summer range for mule deer.

3-14-5 The text in Section 3.5.2.2 has been changed to reflect this correction.

3-14-6 Table 3-5-1 has been revised to include this information.

3-14-7 When we requested a survey following the protocol, it was our intent to include the updated information in the FEIS. The survey was conducted in May and June of 1991, the USFS protocol was strictly followed during the sampling program. During all monitoring sessions, no spotted owls were heard or seen. Section 3.5.3.4 has been updated with the 1991 survey data.

3-14-8 The methods for the spotted bat survey along the powerline corridor are described in Appendix B of the Bio-Resources report dated October 1990. Under the subheading Bats it states: "The search for bats was conducted from sunset to 2130 hrs on September 17. Of particular interest was the candidate 2 species: the spotted bat (*Euderma maculatum*) which is distinguished by an audible, rather than ultrasonic call. The evening was clear, cool and relatively calm after a clear, warm day. Insect activity appeared to be minimal. A Mini-2 UltraSound Bat Detector was used to scan a frequency range from 25 to 120 KHz. No bats were sighted; no spotted bats were heard, and no signals were detected by the UltraSound detector."

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- 3-15-1 3.5.3.8, 3-35.2: Change the word "may" in the last sentence to "will". The information presented in this paragraph indicates that a consultation for California threatened greater sandhill cranes will be required under CESA.
- 3-15-2 3.5.3.9, 3-35: Add white-faced ibis (SSC 1) to this section.
- 3-15-3 3.5.3.9, 3-36: The fourth sentence under "Sage Grouse" states "There are about 9,000 acres of Low Sagebrush habitat in the region that grouse could range through". What region is referred to here? The total amount of low sagebrush habitat within about six miles of the project site is closer to 5,000 acres.
- 3-15-4 The assumptions about sage grouse populations declining refer to data apparently available in 1917 and may not be supportable. The term "lek" is used earlier but is not defined until this point.
- 3-15-5 3.5.3.10, 3-37.1: Add "...these additional potential species..." to last sentence. As written, the implication is that none of the species named in the paragraph were observed. This is incorrect.
- 3-15-6 3.7.2, 3-48.4: The document states "This is the only size fraction that is regulated because the larger size particulates are not a health concern." However, larger size particulates can significantly affect vegetation and wildlife habitat. If the emission is not regulated, is it presumed to have no effect?
- 3-15-7 3.8.13.2, 3-90.2: One-hundred-eighty-two units could be developed on existing parcels. If the zoning is in place how will proposed project facilities such as roads, water and power be isolated from future development? What guarantees can LGMI give that the proposed project will not induce significant growth?
- 3-15-8 3.9.1.1, 3-92.1: There is no "natural" grassland present on the project site. Change sentence to read "Range livestock operations occupy all vegetation types in the study area." and delete the reference to each type.
- 3-15-9 3.9.1.4, 3-93.2: Delete the word "habitat" and add the word population. These legislative refugees were established to prevent hunting which was erroneously thought to be the major factor controlling sage grouse and antelope populations. Habitat condition is now thought to be the major factor regulating populations, not regulated hunting.
- 3-15-10 3-116.1: The second sentence is incorrect; these estimates can be developed from local CDFG data on request.

- 3-15-1 Chapter 6.0 on consultation and wildlife Sections 3.5.3, 4.2.5.2 and 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.
- 3-15-2 This species has been added to Table 3.5-1 as requested by the Commentor.
- 3-15-3 Section 3.5.3.9 has been revised to change this acreage estimate from 9,000 to 5,000.
- 3-15-4 Comment acknowledged.
- 3-15-5 Species observed are clearly stated in the first sentence. Species not observed have been clarified in the text of Section 3.5.3.10.
- 3-15-6 PM10 is the only emission regulated as an air pollutant due to health effects. Larger emissions settle rapidly, usually close to the source, and are not anticipated to have an effect on the surrounding vegetation and, therefore, habitat. Impacts due to dust were not considered significant by most agency wildlife biologists.
- 3-15-7 The 182 units are located along Highway 139. Roads and water will only be developed at the Project site for Project use. After completion the roads will be reclaimed. LGMI has no obligation to supply water to the public. However, the SVEC does have the obligation to provide power to the public if so requested.
- 3-15-8 The corrections provided have been made at Sections 3.9.1.1 and 3.9.1.4.
- 3-15-9 Corrected as indicated.
- 3-15-10 Hunting statistics for big game animals in the Project region are maintained by CDFG. Upland/small game and migratory waterfowl hunting statistics are not recorded.

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- 3-16-1 Table 4.1-1, 4-5: Update this table to reflect the comments included herein.
- 3-16-2 4.2.3.4, 4-21.1: The losses of 296 acres of timber producing soil and 380 acres of low sage producing sites are stated to be long-term, significant adverse impacts of the proposed project. Several subsequent sections need to be changed to be consistent with this statement.
- 3-16-3 4.2.4.1, 4-22.1: The reclamation bond will not, of itself, ensure that reclamation is completed. The amount of monies proposed for reclamation will not ensure its success. We suggest that a separate legal instrument be drafted between LGMI, the lead agencies and CDFG that will become part of the permitting process (Record of Decision, Conditional Use Permit, etc.). This legal document should include mitigations for species and plant communities affected and should emphasize off-site commitments if on-site compensations are not met. See the general issue of mitigation and reclamation discussed above and in subsequent comments.
- 3-16-4 4.2.4.2, 4-24.1: Because the soil structure which provides low sage plant communities will be essentially destroyed and cannot be recreated, isn't the prospect for this plant community somewhat worse than "it is unlikely....will be identical"?
- 3-16-5 4.2.4.2, 4-27.1: Where is the wetlands mitigation plan referred to in the last sentence? The plan should be included in the DEIR? When will it be available for review? How can certification for the Final EIR/EIS be expected without this plan for adequate mitigation of lost wetlands?
- 3-16-6 4.2.4.2, 4-27.4: Given the likelihood for weed invasion on this site, the best intentions (weed free seed, etc.) in the Reclamation Plan will not prevent the adjacent sources of weeds from invading this site.
- 3-16-7 4.2.4.3, 4-29.2: The "ESA" in the first sentence should be identified as the Federal Endangered Species Act (FESA) as opposed to the California Endangered Species Act (CESA).
- 3-16-8 4.2.4.3, 4-30.3: The Mitigation Measures for Vegetation section does not include the 355 acres (or 380 acres identified in soils) of low sage vegetation. The loss of low sage was identified as long-term, significant and adverse under soils (see page 4-21) so presumably the vegetation loss is also long-term, significant and adverse and requires mitigation. Where are the "mitigation measures proposed herein" for the fire tower?

- 3-16-1 Comment acknowledged. All applicable changes were made to Table 4-1-1.
- 3-16-2 The loss of the soils is stated to be significant in Section 4.2.3.2. The significance of the impacts to vegetation, cover values, erosion protection and habitat may vary. We believe the significance values are consistent as stated.
- 3-16-3 The mitigations specified in the Wildlife Habitat Mitigation and Management Plan have been incorporated into Chapter 4.0 mitigation sections. The BLM and USFS will draw upon these mitigation measures to complete their Record of Decision. The County Conditions of Approval will deal with these concerns. An MOU will be signed by the agencies for compliance of reclamation before bond release.
- 3-16-4 As discussed in Section 4.2.4.2, the resulting vegetation may not include species which are specifically adapted to the duripian soil structure. For this reason the resulting vegetation may not be identical. However, there is little question the area will be revegetated.
- 3-16-5 The wetlands mitigation was not included in the Draft EIR/EIS because consultation with the Army Corps of Engineers was ongoing. It has now been completed and is included at Appendix I. This plan is available for public review through this document.
- 3-16-6 Implementation of a weed control program, developed in conjunction with the interested agencies, as mentioned in Section 4.2.4.2 and Section 4.4.11 of the revised Reclamation Plan (Appendix E), will minimize weed invasion at the site.
- 3-16-7 Comment acknowledged. The correction has been made in the text of the Final EIR/EIS.
- 3-16-8 As stated in the Section 4.2.4.2, the cover values will return for this vegetation type. The habitat values will differ for the reclaimed land and are considered to be a long term impact. For this reason the impacts are wildlife related and covered by the mitigation discussed in Section 4.2.5.4. The fire tower mitigation measures are given in Sections 4.2.4.3 and 4.3.6.4.

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- 3-17-1 4.2.4.3. 4-30. 5: Under wetlands impacts, a permit is not mitigation.
- 3-17-2 4.2.4.3. 4-30. 6: The reclamation monitoring for vegetation should include species composition, not just cover.
- 3-17-3 4.2.4.3. 4-31. Table at top of page: How can sampling for species be turned into a vegetation type? The Reclamation Plan does not explicitly plan to reclaim for types. How can the reclamation be turned into vegetation types given all of the near impossibilities previously stated, especially for low sage and Jeffrey pine forest? Reseeding will probably not cure initial failure of reclamation if the failure is related to soil structure or weed invasion.
- 3-17-4 4.2.4.3. 4-31. 3: The evaluation of reclamation paragraph suggests that any species ("biomass") will do. How will this meet the previously stated goal of reclamation of types of vegetation if the emphasis ignores species of vegetation? How can this "...most significant measure of plant communities" be valid if it doesn't include the species in the community?
- 3-17-5 4.2.4.4. 4-31. 1: Why replant 500 Jeffrey pine seedlings per acre if there is almost no chance for their establishment?
- 3-17-6 4.2.4.4. 4-32. 2: For consistency with subsequent statements in the DEIR, please note that the losses of low sage, Jeffrey pine/mountain shrub, grassland, and wetlands are here stated to be long-term, unavoidable, adverse, and significant impacts of the project.
- 3-17-7 4.2.5.2. 4-34. 4: The "designed" intention (under tailings) cannot determine a level of significance under CEQA.
- 3-17-8 4.2.5.2. 4-35. 2: Under cyanide: The proposed netting specifications (2" mesh) provide openings that will allow 38 percent (8 of 21) of all mammal species and 58 percent (50 of 86) of all bird species listed in the document to pass through the netting. Our understanding was that 1" netting would be utilized. One inch netting would probably reduce small bird passage to zero and small mammal passage to an insignificant percentage of species. The fencing specifications should also be included here along with the netting specifications.
- 3-17-9 4.2.5.2. 4-35. 3: What chemicals will be used as "...tailings detoxicants, dust suppressants, road deicers, weed suppressants..."? How can the lead agency determine the significance of these chemicals for fish and wildlife if they are not identified?

- 3-17-1 Section 4.2.4.3 and 4.2.5.5 have been revised to include the mitigation program for wetlands described in Appendix I.
- 3-17-2 The revised Reclamation Plan (Appendix E) includes monitoring species richness for all reclaimed areas and goals for comparison to similar undisturbed areas. Cover data will likely be collected by species, thus providing the opportunity to monitor composition based on cover.
- 3-17-3 Section 4.9 of the revised Reclamation Plan (Appendix E) includes more detail on the methods and goals for comparison of reclaimed areas to existing undisturbed areas.
- 3-17-4 Section 4.9 of the revised Reclamation Plan (Appendix E) includes more detail on the methods and goals for comparison of reclaimed areas to existing undisturbed areas. Cover data will likely be collected by species, thus providing the opportunity to monitor composition based on cover.
- 3-17-5 The first paragraph at Section 4.2.4.4 of the Draft EIR/EIS refers to the loss of the productivity, or rate of growth, of the trees, not the trees themselves. There is concurrence among involved experts that the trees will establish given the 12" soil and coverage methods presented in the Reclamation Plan (Appendix E).
- 3-17-6 These impacts are to the habitat value of the vegetation and not the cover value. The Habitat Migration Plan, included in Appendix I, presents mitigation for these impacts. Following mitigation, these impacts are considered insignificant.
- 3-17-7 The reason this potential impact was treated as not significant was based on the consensus of wildlife biologists at a wildlife impacts meeting and on the technical data available. Should this scenario occur (birds getting stuck in tailings mud) the Applicant will notify appropriate authorities and correct the situation. NDOW personnel contacted have never heard of or seen this occurrence.
- 3-17-8 In the Habitat Mitigation and Management Plan, Appendix I, the Applicant agrees to use 1" netting on all solution process ponds, inspect netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2 Cyanide on Wildlife, and 2.2.3.2 and 2.3.1.7 in the Proposed Action have been revised to address this concern. Netting has proven to be effective in minimizing wildlife mortalities at 95 operating Nevada mines (King and Lamp, 1991).
- 3-17-9 See Table 2.2-4 and Section 2.2.8.10 for additional information on the types of chemicals that would be used. From discussions with Nevada Dept. of Wildlife personnel, of the chemicals listed, cyanide exposure is blamed for mortalities due to toxics. Wildlife are generally not exposed to other toxics used in the gold extraction process, because the chemicals used are enclosed in the mill building or CIP tanks. Erratic bird behavior has been observed when hydrogen peroxide is used to detoxify tailings (Lamp 1991). Other chemicals used to detoxify tailings and suppress dust are not considered lethal to wildlife.

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3-18-1

4.2.5.2. 4-35.4: The sources quoted state that there are "...no known quantifiable effects..." of noise on wildlife. Does this mean that the use of 30,000 tons (60 million pounds) of blasting agents (Table 2.2-4) over the life of the project will have no noise effects on wildlife? Is this consistent with concerns over building damage from blasting which are also stated in the DEIR?

3-18-2

4.2.5.2. 4-36.1: Low sage habitat should be added to the impacts section. The impacts in this section are stated to be "significant potential impacts..." in the first sentence under "Impacts". BLM biologists are cited under three of the species and habitats as stating the impacts are not significant. For Jeffrey pine, the impacts have previously been stated as significant and adverse (page 4-32). This section is inconsistent with the previous statement. Please review the last two sentences in the first paragraph under "Identify Potential Impacts and Level of Impacts" on page 4-34 where disagreement over level of impacts is treated as significant under CEQA. Contrast this with the implications for levels of impacts as reported by the BLM biologists (pages 4-36 and 4-37). The implication is that the "nonsignificant" interpretation of levels of significance has been cited, not the "significant" opinion.

For all the potential impacts listed on pages 4-34 through 4-38 there is no clear statement of what is significant and what is not significant as per CEQA requirements. This is based on the document's assertion and evidence that is consistent throughout the text.

3-18-4

Table 4.5-1. 4-41: This table needs to be revised as the text is changed. Should the heading "Potential Mitigation Measures" be "Proposed Mitigation Measures"? If these are potential measures where are the specific measures?

3-18-5

4.2.5. 4-43.1: There are three mitigation measures listed. The second two were predicated on the success of the first, which, as of May 1, 1991, was not successful. Mitigation measures for sage grouse need to be reformulated and included in the Final EIR/EIS.

3-18-7

4.2.5. 4-43.2: The intention to "...implement mitigation measures as necessary..." is not mitigation. The statement attributable to a CDFG suggestion for a 1:1 replacement of acreage is incorrect. The statement should be corrected to 1:1 replacement of numbers of sage grouse.

4.2.5. 4-43: Under mule deer: The upland shrub plant community should be added to the Jeffrey pine/mountain shrub plant community.

3-18-1

The anticipated average noise levels produced by daytime mine operations would generally be less than 40 dB beyond the Project boundary, as shown on Figure 4.14-1. A noise level of 40 dB is roughly equivalent to soft music (see Figure 3.14-1). Beyond the Project boundary, the noise level would attenuate to a noise level subjectively described as faint to very faint. Therefore, operational noise levels resulting from machinery and other mine operations is anticipated to have no measurable adverse impact on wildlife beyond the boundaries of the Project. Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). Please refer to this section. Blasting will occur up to twice a day for a duration of less than one second. Blasting noise levels at 1600 feet are predicted at 115 decibels. Noise is a pressure wave in the air that radiates away from the source and dissipates very rapidly. As the pit becomes deeper, it will act as a noise barrier, blocking noise from blasting and other Project activities. It is not anticipated that blasting will adversely affect wildlife. See response to Comment 3-11-9 for vibration concerns.

3-18-2

In Section 4.2.5.2 of the draft, all impacts listed were considered significant as stated clearly in the text. The purpose in quoting the BLM biologist was to show that impacts significant locally are not necessarily significant regionally (i.e., this is not the only 355 acres of low sagebrush or 296 acres of Jeffrey Pine/Mountain Shrub in the County, State, or Region). There are thousands of acres of these habitat types located short distances from the Project Area. The subsection on Jeffrey Pine has been revised to clarify this point.

3-18-4

Table 4.5-1 in the draft has been deleted. Its purpose was to help illustrate the impacts associated with the Project in the various phases and give ideas for mitigation. That purpose has been served and the proposed mitigation measures are located in Section 4.2.5.4.

3-18-5

The Mitigation Plan states that if the sage grouse plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

3-18-7

Section 4.2.5.4 has been revised to add upland shrub as noted.

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- 3-19-1 4.2.5.4. 4-43: Under pronghorn antelope: Specifically how and where will the low sage brush be enhanced adjacent to the project site? No "development of permanent grassland sites" is discussed for sage grouse mitigation. The DEIR must be specific on how and where these enhancements will take place? What woven wire? A three wire fence is not a legal fence under BLM or U.S. Department of Agriculture regulations. We suggest a four wire fence, bottom wire smooth and at least 18" above ground, 42" maximum, and no fence stays between posts. This meets all of the agencies' recommendations and criteria for big game passage and can still contain cattle if it is maintained.
- 3-19-2 4.2.5.4. 4-44: Under Jeffrey pine/mountain shrub: Where, over how many acres, and how high will the snags be? How much is "the maximum amount" and what will it be protected from? What criteria will be used to determine when the site is "...again considered forested..." and by whom?
- 3-19-3 4.2.5.4. 4-44: Under Golden eagle: What road kill carcasses will be moved? Deer carcasses cannot be relocated without a permit from CDFG.
- 3-19-4 4.2.5.4. 4-44: Under prairie falcon: We suggest that this mitigation not be done until mine closure is complete. There will be too many toxic sources and other potential mortality sources present while the mine is in operation.
- 3-19-5 4.2.5.4. 4-44: Under wetlands: There is no wetland mitigation plan "appended" to the DEIR. Does a plan exist?
- 3-19-6 4.2.5.4. 4-44: At bottom of page, the DEIR states "Restriction of human access and disturbance is often difficult to enforce, but mine employees will report any poaching activity observed to the CDFG". Compare this sentence with the second mitigation measure listed in Table 4.5-1. How did a civic duty get confused with a real mitigation concern as previously stated?
- 3-19-7 Table 4.5-2: The Conceptual Mitigation Plan will have to be revised as per changes in the text. The plan is lacking in several aspects to completely mitigate the impacts listed. See other comments included herein.
- 3-19-8 4.2.5.6. 4-48: Low sagebrush habitat, pronghorn antelope, and wetland wildlife need to be added to this section.
- 3-19-9 4.2.5.7. 4-49.1: This is pure speculation. There are no data presented or perhaps available to substantiate the statement that this sage grouse population is declining. Other isolated

- 3-19-1 The goal of the mitigation is to maintain and enhance 355 acres of low sagebrush habitat adjacent to the Project area, to replace sage grouse and pronghorn habitat. Please see Section 4.3.5.4 and the Habitat Mitigation Plan located in Appendix I. Section 2.2.8.8 has been revised to meet State and Federal fencing criteria.
- 3-19-2 During mine operation, the goal is to protect 230 acres of Jeffrey Pine habitat in the Preston Canyon/Anderson Ranch area. These areas will not be commercially harvested until the reclamation bond is released. Certain practices to improve habitat diversity will be implemented. Reclamation will include planting of 150 seedlings per acre, and downed logs and snags will be placed as described in the Reclamation Plan located in Appendix E.
- 3-19-3 Applicant will apply for appropriate CDFG permit to remove road kill carcasses from roadway.
- 3-19-4 Prairie Falcon mitigation in Section 4.2.5.4 has been changed to specify at mine closure.
- 3-19-5 The wetlands mitigation plan was not included in the Draft EIR/EIS because discussions were ongoing with the Army Corps of Engineers. It has now been completed and is included in Appendix I. This plan is available for public review through this document.
- 3-19-6 MSHA regulations state that no fire arms will be shot on a mine property. Employees will be encouraged to turn in any poachers and report suspicious activity to CDFG.
- 3-19-7 The specifics of the mitigation are contained in revised Table 4.5-1, Sections 4.2.5.4 and 4.2.5.5, and the Mitigation Plan in Appendix I.
- 3-19-8 The Impact, Mitigation, and Unavoidable Adverse Impacts Sections 4.2.5.2-4.2.5.6, have been revised to clarify these impacts.
- 3-19-9 The wording in the cumulative impacts section as it applies to sage grouse has been modified.

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populations in Lassen County that are closely monitored, including those being hunted, have significantly increased over the past four years.

- 3-20-2 4.2.6.2.4-57.5: We assume "significantly different" as used between an eight-year and seven-year model is a statistically significant difference. How much was the actual difference? This simulation should include and present data for a 7, 8, 9, and 10 year mine life.
- 3-20-3 4.2.6.2.4-60.1: The changes in surface springs will result in changes to surface water distribution for wildlife. The consequences of this effect for wildlife distribution and abundance should be discussed in the Final EIR/EIS.
- 3-20-4 4.2.6.3.4-63: Last under Waste Rock: The implications for acid discharge to fish and wildlife resources are substantial and cannot be effectively evaluated or discounted by information presented in the DEIR. The contingency plan for acid discharge needs to be included in the Final EIR/EIS.
- 4.2.7.4.4-72.4: Is it being proposed to use magnesium chloride for dust control? The text says "such as".
- 3-20-6 Table 4.7-2: Are the total dust emissions from the roads alone expected to be in excess of 20 million pounds of dust for the life of the mine? If so, what are the impacts to surrounding vegetation?
- 3-20-7 4.2.9.10.4-102: The potential for rural housing being induced by the power made available by the proposed project needs to be mitigated by LGMI owning the power line and not selling power to other customers as presented in the alternatives and as discussed above in the general issues.
- 3-20-9 The action of "discussions regarding negotiated compensation" for school impacts should be specified in the Final EIR/EIS.
- 4.2.9.1.4-106: The list of Land Use, Issues, Concerns and Opportunities does not include wildlife habitat which is an important land use already identified in the DEIR.
- 3-20-10 4.2.9.3.4-107: The project site is contained within the South Adin Management Unit of the Modoc National Forest. The specific management direction for this area includes those listed on page 3-96 of the DEIR. Section 4.2.9.3 should describe how the proposed project will help Modoc National Forest meet that direction.

- 3-20-2 Please refer to Section 4.2.6.2, notably Impact To Regional System. Based on annual recharge and withdrawal estimates, pumping for the duration of the Project should not significantly affect groundwater quality or quantity. The shallow local groundwater system is separate from the regional aquifer, and the two systems do not appear to be in direct hydraulic contact with each other. Groundwater pumping from the deep regional aquifer for Project consumption is not anticipated to affect the springs and seeps.
- 3-20-3 Surface water changes will be mitigated to some extent by the created wetlands. Springs and seeps will be monitored for flow and water quality under the CRWQCB permit. See also the response to Comment 3-2-5.
- 3-20-4 The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County in December of 1990, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.
- 3-20-5 Magnesium chloride will be used within the mine boundary for dust suppression.
- 3-20-6 The uncontrolled dust would be approximately 5 million pounds total over the life of the mine. The stated dust control measures of watering roadways, using a dust suppressant on the haul roads and sonic fog devices at crushing facilities will eliminate the majority of the dust. This amount of dust, at this rate, is not expected to have an effect on the vegetation. Impacts due to dust were not considered significant by agency wildlife biologists. Nevada Department of Wildlife (NDOW) personnel contacted also agreed that dust generated by mining operations is not considered a significant impact (King and Lamp, 1991).
- 3-20-7 Comment acknowledged. Please see Section 2.1. Since this alternative has been identified as an environmentally preferred alternative, it is likely it will be a condition of Project approval.
- 3-20-9 Wildlife habitat is addressed in Section 4.2.5; please also refer to Section 4.2.9.4 Recreation.
- 3-20-10 Mining activities are consistent with the Forest Service's multiple use planning objectives provided in the Draft Modoc National Forest Land Management Plan (LMP). The USFS has not developed specific management prescriptions for mining operations, but acknowledges the potential mining resources at Hayden Hill in its Draft LMP (USFS 1987b). Currently, activities on USFS lands are managed to allow the development of the mineral resources at Hayden Hill, in accordance with the National Mineral Policy (30 USC Section 22; 43 USC Section 17-01). The application of best management practices are required in the development of the mining project to achieve resource utilization and maintain multiple land use objectives.

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- 3-21-1 4.2.9.4.4-110: Wildlife Habitat is an existing and future land use. It should be included in this section.
- 3-21-2 4.2.9.4.4-111: Under Recreation: The State game refuge will be reduced by about 530 acres. Is this significant? Why is this statement included under recreation?
- 3-21-3 4.2.9.6.4-111.2: The State is a more appropriate agency than the county to determine if the proposed project is a "compatible use" under the Williamson Act. This is a State act administered by the counties.
- 3-21-4 4.2.9.7.4-112.1: The growth-inducing impacts of the power line should be discussed in relation to fish and wildlife habitat, not just under socioeconomic in section 4.2.8.9.
- 3-21-5 4.2.9.7.4-112.4: The impact to forest land is stated to be insignificant. This is inconsistent with page 4-32 where it is considered to be significant.
- 3-21-6 4.2.12.1.4-127.1: There is no discussion of the routes, frequency, volume by routing or anything about the transportation of the hazardous materials listed in Table 2.2-4 in this section or in the other two sections cited (4.2.12.2 and 2.2.8.10).
- 3-21-7 4.2.12.3.4-128.1: How will LGMI "internal policies" discourage private vendors of hazardous materials? What forms of "discouragement" are being suggested?
- 3-21-8 4.2.12.3.4-128.3: The concerns of Lassen County and City of Susanville over the inadequacy of their personnel to deal with hazardous materials spills should be extended to CDFG Wildlife Protection personnel who have to deal with spills that affect fish and wildlife throughout the routing for these materials in California. This issue extends back to the point of origin for each toxic substance. If the proposed project was not responsible for routing them past waters of the State of California, such as the Pit River, Eagle Lake, etc., there would be no added concern for spills. There are five CDFG Wildlife Protection officers (wardens) in the immediate vicinity of the possible Lassen County transportation routes for these materials. None of them has complete training for handling spills of the materials included. Will LGMI offer training and equipment to them as well?
- 3-21-9 4.2.13.2.4-130.1: This section acknowledges that "...noise and activity...would affect abundance and quality of wildlife and their habitat" and that "These effects would diminish rather rapidly with distance from the project site...". This section further states that the "quality of the hunting experience" and

- 3-21-1 Wildlife habitat is addressed in Section 4.2.5; please also refer to Section 4.2.9.4 Recreation.
- 3-21-2 The Proposed Action will prevent public access to 530 acres of the State Game Refuge, thus wildlife-related recreation opportunities, such as wildlife viewing, will be diminished temporarily. Following reclamation, the area will be returned to pre-mining uses and opened to the public. This impact is not considered significant because the area represented is less than 1% of the State Game Refuge.
- 3-21-3 Rather than debate the compatibility of mining on agricultural preserve lands, the property owner has requested and the County is entertaining cancellation of the Williamson Act contract as it pertains to approximately 638 acres which would be disturbed by mining activities. This is part of an existing 1932 acre agricultural preserve.
- Pursuant to California Government Code Section 51282, the County proposes to make findings that the cancellation is in the public interest for reasons including local economic and employment factors and the development of unique mineral resources. It can also be noted that conversion of land use from rangeland to the mining of significant gold and silver resources is not, in this situation, likely to result in the removal of adjacent lands from agriculture use, or result in discontinuous patterns of urban development since the cause for conversion (ie. the mineral resource) is unique to the site.
- 3-21-4 The Socioeconomic and Power Supply Alternative Sections 4.2.8.9 and 4.3.5 have been updated to include this information.
- 3-21-5 The insignificant impact to commercial forest stated in 4.2.9.7 is consistent with page 4-32 of the draft EIR/EIS which states that the acreages are small compared to those available.
- 3-21-6 Please refer to Figure 3.12-1 for truck routes. Amounts of materials consumed annually are provided in Table 2.2-4. Individual truck capacities vary but would conform to DOT regulations. Frequency will depend on actual consumption rate, but could be estimated from Table 2.2-4.
- 3-21-7 Vendors not conforming to LGMI standards and conditions would be replaced if they continued in non-compliance.
- 3-21-8 The States' "Hazardous Materials Incident Contingency Plan" calls for the CDFG to be the primary State response agency for spills outside of state highway ROW's. CDFG will be trained accordingly by the State. LGMI will welcome agency participants in its hazardous materials training programs.

3-21-9 The intensity of a noise source is calculated by the following equation:

$$I = \frac{W}{4\pi r^2}$$

Where I = intensity; W = total sound power; π = pi; r = radial distance from source.

According to this equation, as the distance increases from the noise source, the intensity will decrease as a function of the distance squared. In other words, noise diminishes rapidly with distance from the source.

Ambient noise level measurements were recorded near the Willow Creek Campground (please see Section 3.14.1) located east of the Project site. The average noise level at the measurement site due to ambient noise sources was 47 dB. The anticipated average noise levels produced by daytime mine operations would generally be less than 40 dB beyond the Project boundary, as shown on Figure 4.14-1. A noise level of 40 dB is roughly equivalent to soft music (see Figure 3.14-1). Beyond the Project boundary, the noise level would attenuate to a noise level subjectively described as faint to very faint. Therefore, operational noise levels resulting from blasting, machinery, and other mine operations is anticipated to have no measurable adverse impact on wildlife beyond the boundaries of the Project. Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). Please refer to this section. "Quality of Wildlife" has been corrected to State quality of habitat. Section 4.2.13.2 on recreation is referring to both noise and Project facility impacts.

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other recreational uses of wildlife would be similarly affected. What is meant by the term "rather rapidly" and what is it based on? How is "quality" of wildlife affected by noise? Page 4-35 states that the effects of noise on wildlife are unquantifiable. Consider using the data that support the statements on page 4-130 to reevaluate those on page 4-35.

3-22-2 The statement on "numerous" hunting opportunities for deer and antelope in the general area is incorrect. ALL deer and antelope tags in northeastern California are oversubscribed, by as many as 40 applicants per available tag in the case of antelope.

3-22-3 Project workers should be prohibited from using Willow Creek and Rush Creek USFS campgrounds; these campgrounds have no room for additional campers during deer season.

3-22-4 4.2.14.2, 4-132, 7: "Significant complaints" should not be the only criteria for the effects of aircraft levels of 115 dB at 1,600 feet from the blast site. Affected wildlife may be significantly impacted but they are not very effective complainants.

3-22-5 4.2.14.2, 4-133, 2: Jet aircraft overflights may not be directly comparable to blasting noise in its effect on wildlife.

3-22-6 Double-breasted cormorant should be double-crested cormorant.

3-22-7 4.3.5, 4-155, 2: We urge the adoption of the LGMI owned power line alternative with no resale of power for the reasons stated in the text which acknowledge the growth-inducing impacts of the proposed alternative. Does the statement regarding power line removal apply to both alternatives? Fish and wildlife habitat needs to be added to the list of resources areas impacted in the last sentence.

3-22-8 4.3.7.1, 4-160, 1: Ice maliciously cutting into the floating cover seems a little far-fetched.

3-22-9 4.3.7.1, 4-160, 4: How could animals walk out onto the floating cover if it was adequately fenced and maintained to exclude them? The safety risk for persons attempting to rescue an entrapped animal would be the same for netting as for a floating cover.

3-22-10 Where is the "project economics" section for the floating cover alternative which is similar to the economics section for the solution tanks alternative?

3-22-11 4.3.7.2, 4-161, 1: The sentence for this section eliminates the need for the second and fourth paragraphs on page 4-160; if ponds

3-22-2 This statement was intended to mean that there are numerous other deer, antelope and upland game hunting and bird watching locations or alternatives within the general area; therefore, the temporary impacts on the experiences of these recreational users do not represent a substantial loss. The habitat mitigations for mule deer and pronghorn may enhance local populations.

3-22-3 There is a potential for competition between recreational users and Project construction workers for camp sites at the Willow Creek Campground. This is considered a short-term impact which would no longer exist after Project construction is completed. Long-term usage of local campgrounds by project-related workers could be discouraged through the strict enforcement of the USFS 14-day stay limit.

3-22-4 Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). Please refer to this section.

3-22-5 See response to 3-21-9 above. Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). Please refer to this section.

3-22-6 Comment acknowledged and corrected in final.

3-22-7 See Section 2.1. Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval. It is assumed that by stating "both alternatives" the commentor means this alternative and the Proposed Action. If LGMI (the Power Supply Alternative) owns the power line, it will be removed after project completion from the mine site to the junction of Route A-2 and Highway 139. If SVEC owns the power line (the Proposed Action), it will be removed to the last residence. At the time of this report, this residence was located approximately 1.5 miles north of the junction of the Hayden Hill Road on Highway 139. Fish and Wildlife impacts have been added to Section 4.3.5. Direct impacts to wildlife would be the same as the Proposed Action. Indirect potential impacts would be less proportional to the amount of induced growth if SVEC owns the line.

3-22-8 Ice can damage both floating covers and netting (please see Section 4.3.7.1), either by cutting, weight, or freeze-thaw action. The issues here are the difficulty of repair, and that floating covers are currently being used only in warmer climates. There is no reference to ice being malicious.

3-22-9 Please refer to Section 4.3.7.1. The purpose of the EIR/EIS process is to present any reasonably foreseeable effects. It is possible for animals to acquire access past a fence. It is true that the health and safety risk would be the same, however, the solid appearance of a floating cover would not deter animals from walking out onto the cover as netting would.

3-22-10 We did not feel it was necessary to include detailed economic information for this alternative, and there is no reference to a section such as this in the document.

3-22-11 The sentence in question in Section 4.3.7.2 refers to draining ponding cyanide solutions on top of a damaged cover, not draining the entire pond. However, the cover would have to be lifted out the solution far enough for repairs to be made safely.

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are drained to repair covers why are human and wildlife safety issues a concern?

3-23-2 4.3.7.4.4-161.1: Last sentence: How could wildlife be exposed to cyanide enclosed in a tank?

3-23-3 4.3.7.4.4-162.3: This paragraph is nonsensical; isolate the cyanide tanks from storm events or enlarge the tanks.

3-23-4 4.4.3.4-167.1: The growth-inducing impacts of the project include loss of fish and wildlife habitat caused by actions to provide housing, water and support facilities for about 736 additional persons (236 for the proposed mine project and 450 to 550 on the 182 parcels for which new power will be available). How many additional parcels and residential developments will be encouraged by power availability? These would seem to constitute a significant impact of the proposed project under CEQA that needs to be addressed much more comprehensively in the Final EIR/EIS.

3-23-5 4.4.4.4-168.4: The energy consumption section needs to include the electrical energy consumption of the project in terms of hydroelectric, fossil, or nuclear fuels. Wouldn't this be comparable to the mobile equipment energy demands?

3-23-6 5.4.2.2. and 5.4.3.2: The intention that a "...plan shall be submitted..." is not mitigation under CEQA (refers to project specific grading plan and erosion control plans).

3-23-7 5.4.4.1. 5-9.2: The last sentence refers to a level of impact "if" the Surface Mining and Reclamation Act (SMARA) is used. How could SMARA be ignored? How, specifically, does SMARA direct the reestablishment of mature forests, especially in this context where it is acknowledged that restoration will be unlikely or nearly impossible? What about the relationship of SMARA to other plant communities?

3-23-8 5.4.4.1. 5-10.4: The last sentence states "...impacts to vegetation would not be significant." The DEIR has already stated on page 4-32 that the impacts are significant and unavoidable.

3-23-9 5.4.4.2. 5-12. Policy 2: Consultation and "consideration" of comments do not constitute mitigation under CEQA.

3-23-10 5.4.4.2. 5-12. Biological Resources Goal 2. wetlands: Which wetlands and which riparian corridors will be protected? By what means? Add fish and wildlife habitat to the listed uses.

3-23-2 Please refer to Section 4.3.7.4. Enclosed steel tanks for storing cyanide solutions represent new technology for the mining industry. There is the possibility for leaks, overflow, and failure, and the presence of cyanide solutions in the storm event pond. Therefore, it would be possible for wildlife to be exposed to these solutions. Until this technology is proven, "it is unknown whether this design would actually minimize mortality to wildlife."

3-23-3 Please refer to Section 4.3.7.4. The purpose of this alternative is to enclose all Project-related cyanide solutions. Precipitation onto the heap would be contaminated with cyanide so it would not be possible, nor desirable, to isolate the tanks from storm event run-off. It is not feasible to enlarge the tanks. Increasing the number of tanks is discussed in the following paragraphs of this section.

3-23-4 This information has been added to Section 4.4.3. An estimate of the total number of parcels available for growth is included in Section 4.2.8.9. An EIR need not engage in a speculative analysis of environmental consequences for future, unspecified development. See Section 2.1 since the Power Supply Alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

3-23-5 Section 4.4.4 has been revised to include annual electrical consumption. We disagree with the comparison of the mobile equipment energy demands to fuels used to generate electricity in this case. The electrical power supplied to the mine by the SVEC will be generated whether it is used or not.

3-23-6 See response to comment 3-8-2, which addresses appropriate language for mitigation measures.

Policy 4 in Section 5.4.2.2, Mitigation Measures for Impacts to Geology and Topography, has been revised as follows:

Policy 4--Lassen County shall require submittal and implementation of a project-specific grading plan pursuant to SMARA to address grading and erosion control for mining operations.

Policies 7 and 5 in Section 5.4.3.2, Mitigation Measures for Impacts to Soils, have been revised as follows:

Policy 7--An erosion control plan shall be submitted to the appropriate jurisdictional agency for review and approval before reclamation activities commence and shall be implemented.

Policy 5--An erosion control plan shall be submitted to the appropriate jurisdictional agency for review and approval before mining activities commence and shall be implemented.

- 3-23-7 The last sentence in paragraph 2 of Section 5.4.4.1, Vegetation and Wetlands Impacts, Grazing and Timber Production Impacts, states that the loss of land used for timber production is a permanent, unavoidable impact that can be mitigated to insignificance if SMARA reclamation standards are used. The intent of this sentence is to ensure that the Resource Plan complies with SMARA reclamation standards, including revegetation standards (Article 5, Section 2773 (a) and (b)). The last sentence in paragraph 2 of Section 5.4.4.1, Vegetation and Wetlands Impacts, has been revised as follows:
- This permanent, unavoidable impact can be mitigated to insignificance if with implementation of SMARA reclamation standards are used.
- SMARA would affect the reestablishment of mature forests and other plant communities by requiring reclamation activities to comply with established site-specific revegetation criteria for the planning area and statewide revegetation standards.
- 3-23-8 The statement on page 4-32 that impacts to vegetation are significant and unavoidable has been changed in Section 4.0 of the Project EIR/EIS. Impacts to cover are not significant because of required reclamation. Impacts to wildlife habitat would be mitigated to a less-than significant level by implementation of the revised Policy 4 (see response to comment 3-25-4) which would require a habitat management plan. With these revisions, the significance of impacts to cover and wildlife habitats are consistent between Chapters 4.0 and 5.0.
- 3-23-9 See response to comment 3-8-2, which addresses appropriate language for mitigation measures.
- The intent of this policy is not to fully mitigate vegetation impacts but to further reduce their potential significance to a less-than-significant level. In addition, this policy ensures that the County and other affected agencies are involved during development of the reclamation plan.
- 3-23-10 The purpose of the Resource Plan goals is to express an ideal future end which are general expressions of community values. It is not appropriate to provide more detail regarding which wetlands and/or riparian corridors will be protected by the Resource Plan because a specific mining configuration has not been identified in the planning area. Therefore, all wetlands and riparian corridors in the planning area must be protected from future mining operations. Wetlands and riparian corridors will be protected from future mineral development through implementation of SMARA revegetation standards, CDFG Section 1601-1606 regulations, and COE Section 404 regulations, as well as by the requirement for a wetlands replacement plan as part of the Conditional Use Permit.
- In addition, the term "wildlife" has been added as a use to Biological Resources Goal 2 in Section 5.4.4.2, Vegetation and Wetlands Mitigation.

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- 3-24-1 5.4.4.2, 5-13, top of page: The first two policies need to specifically state how this will be accomplished. The next policy statement needs to be changed from number 4 to 3.
- 3-24-2 5.4.5.1, 5-13, 2: The sentence says "depending on the location of the mining facilities...". Is the location of mining facilities still unproposed or undetermined?
- 3-24-3 5.4.5.1, 5-13, 3: In addition to the U.S. Fish and Wildlife Service (USFWS), CDFG would be involved since CESA also applies.
- 3-24-4 5.4.5.2, 5-14, 1: Policy #4 (should be #3) on the previous page should also be adapted here. Since the special status species referred to includes threatened and endangered species, policy 2 of objective B is redundant. There are substantial inconsistencies regarding which species and habitats prompt what kind of policies.
- 3-24-5 The FESA and CESA are no less forceful than wetlands issues. Further, should the reader assume that the "special status species" in this section are the same as those listed in Table 3.5-1? If so, what status does the pronghorn antelope have for these mitigations since the species is not listed there? The "no significant impact-no mitigation required" statements here are inconsistent with much of the information presented in chapters 3 and 4 of the DEIR.
- 3-24-6 5.4.10.2, 5-20, 2: Mitigate this impact by prohibiting use of the campgrounds. Include the referenced housing impact analysis in the Final EIR/EIS.
- 3-24-7 5.4.12.2, 5-23, 1: Include CDFG wildlife protection in the required personnel section.
- 3-24-8 5.4.13.1, 5-27, 2: The SMARA is not designed for definitions of land use capability. Why is it being cited for that use here?
- 3-24-9 5.4.13.2, Policy 3: Add fish and wildlife habitat and appropriate technical experts to this policy. The intent to "...minimize...by consulting..." is not functional mitigation under CEQA.
- 3-24-10 5.4.17.1, 5-31, 3: The statements in the last paragraph are nonsensical. If the impact is judged minor for recreational users, why would they have to be "accommodated" elsewhere?
- 3-24-11 5.4.17.2, 5-32, 4, Policy 3: Change the policy to indicate that camping would be prohibited, not just actively discouraged. This should be referred to USFS for action.

- 3-24-1 Policy 1 of Biological Resources Goal 2, Objective B, states that as part of land use permitting, encourage revegetation with native plant species in areas that are temporarily disturbed in both riparian corridors and wetlands during development. This policy would be accomplished through implementation of the reclamation plan and the Conditional Use Permit. Pursuant to SMARA, Article 2, Section 2773 (a), reclamation plans are required to develop site-specific criteria for evaluating compliance with the plan's revegetation standards. As part of the permitting process, the Conditional Use Permit would also address revegetation efforts as a condition of approval.
- Policy 2 of Biological Resources Goal 2, Objective B, to encourage private and public projects to minimize encroachment on riparian corridors and wetlands, would be implemented during the environmental review of a site-specific project. This environmental review would include analyzing the project's site plan to determine impacts to riparian corridors as part of the Conditional Use Permit process.
- Policy 4 of Section 5.4.4.2, Vegetation & Wetlands Mitigation, has been renumbered as Policy 3.
- 3-24-2 The Hayden Hill Resource Plan allows for a variety of mining activities to occur in the planning area. The intent of the Plan is to provide a general broad policy framework, within which any mineral development project would be evaluated on a project-specific basis.
- 3-24-3 The following sentence has been added after sentence 1, paragraph 3 of Section 5.4.5.1, Wildlife and Aquatic Biology Impacts:

The CDFG would also require mitigation for these impacts pursuant to the California Endangered Species Act of 1984.
- 3-24-4 It is true that the wetlands policy (renumbered #3) will also help mitigate for impacts to wildlife. The policies of the Biological Resources Goal are written to help achieve the Biological Resource Goals included in the Open Space and Conservation Element of the Resource Plan. These policies are intended to apply to wildlife habitat in general, and to any rare, threatened or endangered species that currently exist or may exist in the planning area in the future. Although the intent of Policy 2 of Objective B does overlap with existing State and Federal laws protecting rare, threatened or endangered species, the intent of this policy is to formalize the County's commitment to protect these wildlife resources.

(See also comment 3-24-4, above)
- 3-24-5 For purposes of the Hayden Hill Resource Plan, special-status species are those species considered rare, threatened and/or endangered under CEQA, CDFG, and USFWS programs and species that are California Species of Special Concern, as well as USFS and BLM Sensitive Species. USFS and/or BLM Management Indicator Species (such as the pronghorn antelope) are not considered to be special status species for the purpose of Policy 2 of Objective B, unless they are also special status species as defined above.
- Biological Resources Goal 1 of the Resource Plan is designed to minimize impacts to wildlife by minimizing impacts to their communities. Revisions to require a habitat management plan as described in the response to comment 3-25-4 address the issue of potential significant impacts to wildlife habitat.

- 3-24-6 To address the impact of short-term construction worker housing by prohibiting use of local campgrounds, see response to Comment 3-24-11.
- The housing impact analysis referenced in Policy 1, Objective B of the Housing Goal is included in Section 4.2.8.5, Housing Impacts, of the Hayden Hill Project EIR/EIS.
- 3-24-7 The following sentence has been added as the last sentence of paragraph 1, Section 5.4.12.2, Law Enforcement:
- The CDEG would also be responsible for enforcing wildlife protection in the planning area.
- 3-24-8 The first sentence of paragraph 6, Potential Existing and Future Land Use Conflicts, in Section 5.4.13.1, Land Use Impacts, has been revised as follows:
- Using SMARA definitions for compatible and incompatible land uses, ~~of land use compatibility;~~ as well as definitions for interim and buffer uses intended to give the County additional guidance for future development, mineral resource development at Hayden Hill would be consistent with existing land uses, including rangeland, timber, wildlife habitat and recreation.
- Land use definitions for compatible and incompatible land uses for mineral resource development are defined pursuant to Title 14 of the California Code of Regulations, Article 6, Mineral Resource Management Policies, Section 3675. These regulations are used to implement SMARA.
- 3-24-9 Policy 3 in Section 5.4.13.2, Mitigation Measures for Land Use Impacts, has been revised as follows:
- Policy 3—Project sponsors should minimize the short-term loss of rangeland and timber by ~~ensuring~~ complying with BLM and/or other agencies regarding management of grazing allotments and commercial timber sales during mining activities on public and private land.
- See response to comment 3-8-2, which addresses appropriate language for mitigation measures.
- 3-24-10 Paragraph 3, Reduced Quality of Recreation Activities, in Section 5.4.17.1, Impacts to Recreation, states that noise, activity, and the visual effects of the proposed mining development would have a minor impact on the abundance and quality of hunting and bird watching activities in the immediate vicinity of the planning area, and that these activities can be accommodated throughout the region. The intent of this paragraph is to recognize that although a minor loss in the quantity and/or quality of recreational opportunities may result from mineral development in the planning area, these activities are not unique to this area and similar recreational activities exist throughout the planning vicinity.
- 3-24-11 The USFS enforces a 14 day limit on camping at the Willow Creek Campground, therefore prohibition of the temporary residential use of this facility is not necessary.

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- 3-25-1 5.4.19.1, 5-34.3: The revegetation of the abandoned heap leach pad was a "natural" event not an "effort".
- 3-25-2 5.4.21.5-36.1: The section numbers in the sentence are transposed.
- 3-25-3 Table 5.4-1.5-17: The table will have to be revised to be consistent with changes in the text.
- 3-25-4 5.4.22.5-43.2: Add "and wildlife" at the end of the second sentence. Address wildlife in the paragraph and correct the "nonsignificance" to significant as per statement on page 4-32.
- 3-25-5 5.4.23.5-44. Top of page: Changes to low sage and forest resources have already been stated to be nonrestorable. How could project changes not be irreversible? The last sentence in the paragraph is fundamentally inconsistent with much of the information in the DEIR.
- 3-25-6 6.3.6-7.1: As previously indicated, consultation will be required under CESA.
- 3-25-7 7.0.7-1: We notice that no representatives of the USFWS were contacted or consulted.
- 3-25-8 1.3.2. App. D. D-3: There is no reference to CDFG under this section. CDFG needs to be included in the mitigation compliance section for fish and wildlife habitat.
- 3-25-9 1.5. App. D. D-5: How does this section relate to the "Conceptual Mitigation Plan" (MCP) (for fish and wildlife) presented in Table 4.5-2? There should be a separate section, similar to the MCP, that explains fish and wildlife mitigations.
- 3-25-10 2.1. App. D. D-6: As the State trustee agency for fish and wildlife within Lassen County under CEQA, CDFG has responsibilities for overseeing project mitigations. Refer to AB 3180 for each agency's responsibilities.
- 3-25-11 The Lassen County Code Enforcement "Office" is not staffed to a level that can adequately administer the MCP. Currently, there is one staff member within the planning department and that person has no authority as a law enforcement officer. That staff member cannot fully cover all of the county's current planning violations. What provisions will LGMI make to staff this office such that the proposed project can be adequately monitored?
- 3-25-12 2.4. App. D. D-7: How can Lassen County, which has no expertise in biological systems, be expected to monitor the biological

- 3-25-1 Sentence 2 in paragraph 3 of Section 5.4.19.1, No Project-Preserve Cultural and Biological Values, has been revised as follows:

However, ~~efforts to revegetate~~ natural revegetation of the abandoned heap leach pad ~~was~~ was substantial.
- 3-25-2 The section numbers referenced in Section 5.4.21, Significant Unavoidable Environmental Effects, paragraph 1, are correct.
- 3-25-3 The revised Table 5.4-1 has been included in Section 5.0.
- 3-25-4 "Wildlife habitat" will be added to the end of the second sentence of paragraph 3 in Section 5.4.22, Relationship Between Local Short-Term Uses and Long-Term Productivity. The following will be added after this second sentence in the paragraph:

Reclamation plantings would mitigate for short-term potential losses of vegetative cover of large areas of Jeffrey Pine/Mountain Shrub and Low Sagebrush vegetation. However, potential impacts to wildlife habitat in these areas could be significant.
- To mitigate for these potential significant impacts, add Policy 4 of Biological Resources Goal 1, Objective A to Section 5.4.5.2, Mitigation for Wildlife and Aquatic Biology, paragraph 1, and amend the policy to read:

When critical habitats are subject to significant environmental impacts, a habitat management plan must be prepared which describes mitigation measures to be undertaken that involves either on-site or off-site compensation ~~shall be considered~~ with the objective of providing no less than equivalent habitats.
- Implementation of this policy would mitigate adverse impacts to wildlife habitats to a less-than-significant level.
- 3-25-5 The last sentence of paragraph 1 in Section 5.4.23, Significant Irreversible Changes if the Resource Plan is Implemented, only addresses the types of land uses that will be restored after mining activities and reclamation take place. Impacts associated with these types of land uses are addressed in paragraph 2 of this section.
- To address potential irreversible changes to timber resources and wildlife habitat, add the following sentence after the fifth sentence of paragraph 2 in Section 5.4.23:

Irreversible changes could occur to timber resources in the Jeffrey Pine vegetation area, and to wildlife habitat in the Jeffrey Pine and Low Sage areas within any mining area.
- See also response to comment 3-23-7.
- 3-25-6 Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2, and 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.
- 3-25-7 The USFWS received the NOI at the same time as all other agencies in October 1989. The USFWS office in Washington D.C. was shipped three copies of the draft on April 5, 1991. Formal consultation has been initiated by the responsible agencies (BLM).
- 3-25-8 CDFG has been included in the MCP (Appendix D) as a trustee or advisory agency to the County.

- 3-25-9 Fish and wildlife mitigation is addressed in the MCP (Appendix D).
- 3-25-10 CDFG is a trustee or advisory agency to the County and has participated in the habitat and wildlife mitigation plan. See Appendix I.
- 3-25-11 The MCP is not anticipated to overburden the County staff. See Appendix D. The burden of compliance monitoring is carried by the Applicant. However, this Project, in conjunction with other mining operations in the County, requires the time of one mitigation compliance officer employed by the County. LGMI will contribute to a fund along with the other mining companies to support this person (AB3180 lead agency monitoring).
- 3-25-12 See Section 2.4 of the MCP in Appendix D.

SPECIFIC COMMENTS
HAYDEN HILL DEIR/DEIS

-17-

impacts of the project? If not Lassen County, what agency would be expected to do so? Where is it expected that the staff and funds will come from? In the second sentence, in regard to proprietary information, what mitigation monitoring information would LGMI and the lead agencies consider proprietary and not available for public or public agency review?

3-26-2 3.0. App. D, D-8: This section needs to include specific information on fish and wildlife habitat and compliance for fish and wildlife mitigations.

3-26-3 3.2. App. D, D-2: The section on "Reporting" should include the Migratory Bird Treaty Act and the California Fish and Game Code.

3-26-4 3.4. App. D, D-12: This section also should include the above mentioned Act and Code as well as provisions relating to violations of CESA and the FESA consultation and mitigation process.

3-26-5 3.5.1. App. D, D-13: The qualifications for the Mitigation Compliance Coordinator (MCC) should include familiarity with the basic biology of the primary fish and wildlife species that could be impacted by the project. The MCC will also have to be fully aware of the mitigation provisions that must operate as part of the project.

3-26-6 App. B of App. D: (Permit Conditions and Monitoring Measures) Mitigation compliance provisions of AB 3180 will have to be integrated into this section.

3-26-7 App. D of App. D: Add CDFG to this list of agencies.

3-26-8 7.2.5. App. E, E-22, 2: What are the criteria for the decisions to use herbicides? What herbicides would be used to control what species?

3-26-9 7.3. App. E, E-23, 1: What role will livestock play in the implementation? Please specify under what criteria and where livestock will be used and to what extent.

3-26-10 7.5. App. E, E-22: CDFG should be included as a signatory agency for the reclamation bonding.

3-26-11 7.6.1. App. E, E-23: The first sentence of the section should be changed to indicate that success of revegetation will not be determined by monitoring, but by evaluating the results of monitoring to match them to predecided goals for species composition and cover values.

3-26-2 See the MCP in Appendix D and the Wildlife and Habitat Mitigation Plan in Appendix I. These concerns are addressed in these areas.

3-26-3 See response to 3-26-2 above.

3-26-4 See response to 3-26-2 above.

3-26-5 Comment acknowledged.

3-26-6 See response to 3-26-2 above.

3-26-7 CDFG has been added to the MCP. See Appendix D.

3-26-8 The criteria for instituting any program which utilizes herbicides would be under the control of the County Agricultural Commissioner. See also the response to Comment 3-16-6.

3-26-9 Livestock will be used in reclamation for control of plant competition and increasing vegetation establishment. Livestock grazing will only occur in managed settings.

3-26-10 CDFG is an involved agency through the County. The County will solicit CDFG's input prior to bond release. However, no provision is made for CDFG to be signatory to the bond.

3-26-11 See Section 4.8 of the revised Reclamation Plan (Appendix E). The procedures for the reclamation success evaluation are presented here.

SPECIFIC COMMENTS
HAYDEN HILL DEIR/DEIS

-18-

3-27-1 The table on the following page seems unrealistic for low sage and Jeffrey pine in light of all of the information in the DEIR which explains that these two types will be virtually impossible to replace.

3-27-2 I.2.1.1. App. I, I-7: The potential mitigation measures that are referred to in Table I.2-1 do not match those presented in Table 4.5-2 in the text.

The last mitigation measure in Table I.2-1 ("Mitigate any losses as prescribed by CDFG") should be addressed in the MCP.

The four mitigation measures listed on page I-13 must specifically identify how and where these actions will take place.

3-27-5 I.2.2. I-13: The sentence in the middle of the paragraph indicates that "...continued attraction of males may be needed annually". Where is it expected they (male sage grouse) will come from? The DEIR has already stated (accurately) that this is an isolated population with no outside recruitment. The last opportunity to attract local birds from the site was probably April 1991 and that apparently did not work.

I.2.2. App. I, I-14: The table does not match Tables I.2-1 and 4.5-2. Who will carry out the baseline study for mule deer that is identified in this table? What methodology will be used?

3-27-7 App. J: The USFWS is not included in the list of Federal agencies which received a copy of the DEIR.

3-27-1 The values shown indicate cover value goals for areas which were of this vegetation type. They do not mean this type of vegetation will be re-created.

3-27-2 Appendix I in the Draft, Wildlife Impact Analysis Approach was the first step - an early draft conceptual mitigation plan. What appears in Chapter 4 of the FEIS is the proposed mitigation. The Impact Analysis Approach was only included in the Draft as an informational supplement to show the process the specialists went through in defining impacts and mitigation needs. The analysis was the result of a meeting between wildlife biologists discussing impacts. It has been deleted from the FEIS (it no longer serves any purpose) and has been replaced by the Habitat Mitigation Plan in Appendix I.

3-27-3 See the MCP, Appendix D.

3-27-4 See response 3-27-2.

3-27-5 The Habitat Mitigation Plan gives the specifics of sage grouse mitigation.

3-27-6 See response 3-27-2.

3-27-7 The USFWS office in Washington D.C. was shipped three copies of the draft on April 5, 1991. (They received copies but were inadvertently left off of the list in Appendix J.) The Sacramento office received the Draft and has been added to the FEIS distribution.

Memorandum

To : Mr. Ken Button
State Clearinghouse
Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, California 95814

Date : May 14, 1991

Place : Sacramento

From : Department of Food and Agriculture -- 1220 N Street, P.O. Box 942871
Sacramento, CA 95814-0001

Subject: SCH No. 89020079 -- The Hayden Hill Project

4-1-1

The California Department of Food and Agriculture (CDFA) has reviewed the Draft Environmental Impact Report (DEIR) on the above referenced project. This project would involve the expansion of a mining area into 658 acres of land under Williamson Act Contract. The CDFA has the following comments and recommendations.

The CDFA considers the cancellation of a Williamson Act Contract that covers 658 acres of land a significant negative impact to the area. In addition, to the west and south of the proposed site (Figure 3.9-4) land is also under Williamson Act Contract. This project may interfere with the agricultural operations in these neighboring areas, as well, and may eventually lead to cancellation of these contracts, also.

In general, the CDFA does not approve of projects that involve cancellation of Williamson Act contracts. The CDFA believes that if the 658 acre parcel is incorporated into the mining area, mitigation measures need to be included in the Final EIR to protect the Agricultural Preserves bordering the mining site (Figure 3.9-4). Such mitigation measures include berms and buffer zones to separate the two types of land uses.

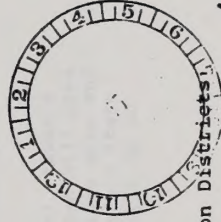
The CDFA supports the right of local agencies to develop and implement land-use policy in its area of influence. However, the CDFA wants to assure that agricultural land is not prematurely and irreversibly lost due to development which is not accurately assessed for environmental impact.

Sincerely,

Harry McHale
Mary McNally

Graduate Student Assistant
Agricultural Resources Branch
(916) 322-5227

cc: Mr. Ken Button
Lassen County Agricultural Commissioner
California Association of Resource Conservation Districts



4

4-1-1

The discussion on the land use impacts to Williamson Act lands must be read in conjunction with the discussion of impacts on rangeland uses (Section 4.2.9.4), soil (4.2.3), vegetation (4.2.4), and the revised Reclamation Plan.

As proposed, lands currently within the agricultural preserve are proposed for the following specific mining uses: 15 acres for the mining pit; 131 acres for the tailings pond; 90 acres for the heap leach pad; 7 acres for solution ponds; 20 acres for topsoil storage; and, 15 acres for a portion of the waste rock dump. The remaining area is between and around the specified uses.

The duration of the disturbance is projected to be eight to ten years for actual mining activity with reclamation activity to follow immediately. Successful reclamation is addressed in the release criteria of the revised Reclamation Plan.

Rather than debate the compatibility of mining on agricultural preserve lands, the property owner has requested and the County is entertaining cancellation of the Williamson Act contract as it pertains to approximately 658 acres which would be disturbed by mining activities. This is part of an existing 1932 acre agricultural preserve.

Pursuant to California Government Code Section 51282, the County proposes to make findings that the cancellation is in the public interest for reasons including local economic and employment factors and the development of unique mineral resources. It can also be noted that conversion of land use from rangeland to the mining of significant gold and silver resources is not, in this situation, likely to result in the removal of adjacent lands from agriculture use, or result in discontinuous patterns of urban development since the cause for conversion (i.e., the mineral resource) is unique to the site.

STATE OF CALIFORNIA
STATE LANDS COMMISSION
1807 13TH STREET
SACRAMENTO, CALIFORNIA 95814

RECEIVED

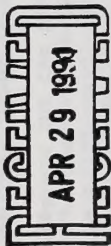
PETE WILSON, Governor

APR 30 1991

LASSEN COUNTY
PLANNING DEPT.

April 26, 1991

File Ref.: SD 91-04-10



Lassen Gold Mining, Inc.
P. O. Box 1028
Susanville, California 96130

To whom it may concern:

Subject: Proposed Open Pit Mining Operation, Approximately 50 Miles
Northwest of Susanville, Lassen County

We have received and reviewed the Draft Environmental Impact Report (EIR) for
the proposed Hayden Hill Project, Lassen County.

Based upon the information provided and from the maps attached with the Draft
EIR, it has been determined that the proposed project will not involve any lands under the
jurisdiction of the State Lands Commission.

Thank you for the opportunity to respond to the proposed project.

Sincerely,

Leslie H. Grimes,
Deputy Division Chief

cc: Steffen, Robertson and Kirsten, Inc.
1755 East Plumb Lane, #241
Reno, Nevada 89502

Barbara Dugal, Land Agent

5-1-1 Comment acknowledged.



Organized Sportsmen

Of Lassen County

P.O. Box 467

Susanville, California



RECEIVED

May 28, 1991

11

MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

TO: Mr. Bob Sorvaag, Director
Lassen County Planning Dept.

SUBJECT: Draft EIR-EIS, Hayden Hill Project, Lassen Gold Mining Inc.

Dear Mr. Sorvaag:

We would like this letter to be considered our official response to the aforementioned EIR-EIS. We have received this document and would like to comment on relevant issues that cause us concern. Specifically, these are as follows:

- A. We are concerned that employees of this project will use the Rush Creek and Willow Creek Forest Service campgrounds to the detriment of the general public, particularly hunters and fishermen. The employees of the project should be excluded from prolonged usage of these facilities.
- B. Adjacent springs to the project are crucial to wildlife population in the area. Considering the amount of water to be used by this project, adequate mitigations must be found to assure water for fish and wildlife.
- C. The destruction of at least two sage grouse strutting grounds causes us concern. Apparently, relocation has failed for 1991 and we are not satisfied with the non-specific "habitat improvements." We strongly feel that the project proponents should initiate mitigation measures in another area to compensate for the loss of the project's resident sage grouse population.
- D. The amount of blasting at the project will, we feel, cause a loss in the numbers of antelope utilizing the Hayden Hill area. Antelope numbers are reported down in the Muck Valley area and we feel it is due to the blasting that has taken place there. We just cannot believe that blasting will have little or no effect on the indigenous wildlife.

6-1-2

There is a potential for competition between recreational users and Project construction workers for camp sites at the Willow Creek Campground. This is considered a short-term impact which would no longer exist after Project construction is completed. Long-term usage of local campgrounds by project-related workers could be discouraged through the strict enforcement of USFS 14-day stay limits.

6-1-3

The MCP, in Appendix E, has monitoring requirements on the areas seeps and springs. The Water Resources Section 4.2.6, explains the impacts and mitigation to the areas water resources. The permit from the CRWOCB also has monitoring requirements. The Applicant has agreed to create a wetlands in Section 2; the details of this Wetlands Mitigation Plan are located in Appendix I.

6-1-4

CDFG and the Applicant, LGMI, have developed a Wildlife Habitat Mitigation and Management Plan (HMP). The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The pond lek will not be destroyed for two years according to the mine plan. Passive relocation attempts will be made during those years. The Mitigation Plan states that if the sage grouse relocation plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

6-1-5

Impacts to wildlife due to noise is not considered significant due to the technical information available as well as information available from other similar operations and agencies that monitor them, such as the Nevada Department of Wildlife. Section 4.2.5.2 has been revised to include more information on the impacts of noise on wildlife. The sections on Noise, 3.14 and 4.2.14, have also been updated with more information. The anticipated average noise levels produced by daytime mine operations would generally be less than 40 dB beyond the Project boundary, as shown on Figure 4.14-1. A noise level of 40 dB is roughly equivalent to soft music (see Figure 3.14-1). Beyond the Project boundary, the noise level would attenuate to a noise level subjectively described as faint to very faint. Therefore, operational noise levels resulting from blasting, machinery, and other mine operations is anticipated to have no measurable adverse impact on wildlife beyond the boundaries of the Project.

6-2-1 The enclosed cyanide system alternatives were developed to minimize wildlife mortality due to exposure to cyanide solutions. The steel tank alternative represents new technology for the mining industry. Floating covers have yet to be used in a harsh climate similar to that of the Project site. The effectiveness of both of these alternatives is unproven. As yet, there has been no technology developed to cover ponds with a solid cover.

In the Habitat Mitigation and Management Plan, Appendix I, the Applicant agrees to use 1" netting on all solution process ponds, inspect netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2 Cyanide on Wildlife, and 2.2.3.2 and 2.3.1.7 in the Proposed Action have been revised to address this concern. Netting has proven to be effective in minimizing wildlife mortalities at 95 operating Nevada mines (King and Lamp 1991).

6-2-2 Comment acknowledged. LGMI is working with CDFG and the USFWS to mitigate impacts and improve/enhance several fish and wildlife habitat types and areas.

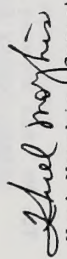
6-2-3 The Mitigation Plan specifies what the applicant will do to mitigate wildlife impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 - 4.2.5.5 have been revised to reflect the contents of this plan. The Mitigation Plan is located in Appendix I.

6-2-1 E. We would ask that all ponds containing toxics be covered completely with a solid cover to preclude all wildlife from entering these ponds.

6-2-2 F. We feel strongly that the project proponents should comply with all mitigation measures asked for by the California Department of Fish & Game and work co-operatively with that agency to absolutely minimize damage to fish and wildlife populations and habitat.

6-2-3 G. Finally, we would ask the project company to spend a good deal more money than they are planning for wildlife. They have touted to sportsmen numerous times they are "environmentally friendly" and do "good things" for wildlife. We would like to see them put up money to match their words and do some great things for fish and wildlife in Lassen-Modoc Counties.

Respectfully Submitted


Huel Morphis, Secretary
Organized Sportsmen of Lassen County



SIERRA CLUB
Redwood Chapter
North Group

POST OFFICE BOX 238
ARCATA, CALIFORNIA 95521
May 23, 1991

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MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

Merle Anderson,
Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, CA 96130

Re: Draft EIR/EIS Hayden
Hill Project

Dear Mr. Anderson:

Thank you for the opportunity to comment on the environmental review document for the Hayden Hill Lassen Gold Mining project which proposes to mine six million tons of ore per year over an eight-year period. I attended the public meeting in Adin on May 2, 1991 and found the presentations and responses to questions very helpful in furthering my understanding of the project. I believe there are a number of concerns which a project of this magnitude and complexity raises, including very important ones relative to future uses of the land, cultural resources, the aesthetic values of recreation and visual quality, impacts to water resources and wildlife, and the ecological integrity of the landscape. My comments will focus on three critical issues, which I feel were not adequately addressed in the EIR/EIS: water, wildlife, and reclamation.

Water Quality and Quantity: More than a century of mining throughout the western United States has left us with a legacy of degraded landscapes and sterile, polluted waters. Because the impacts to water quality can be significant and long-term and because those impacts can affect other resources and values, there is no more critical project issue than water.

To the north, the project area drains into Willow Creek via the Indian Spring drainage and Preston Canyon. To the southwest, the project will influence an unconfined drainage which extends toward Silva Flat Reservoir and includes Dillon Lake and Snyder Waterhold. (pp. 3-41.42) The Willow Creek drainage is historic habitat for the Modoc sucker, a Federally-listed Endangered Species, but "fisheries data leaves (sic) questions about the current state of the Modoc sucker population in Willow Creek." (pp. 3-37.38) A California State Game Refuge, established to protect sage grouse and antelope habitat, is located to the west and southwest of the project area and incorporates two privately-authorized wildlife management areas at Silva Flat and Dillon Lake, where the management objective is to "increase waterfowl nesting habitat for geese and ducks." (pp. 3-93.94; fig. 3.5-2)

7-2-1

The EIR/EIS concludes that the effects of the Proposed Action on "surface water quantity and quality would be minimal." (p. 4-50) But the data provided in the document are not adequate to support that conclusion. In assessing the potential for acid rock drainage (ARD) from the waste rock dump, it is necessary to determine the concentration of total sulfur in the rock. Samples tested demonstrated a wide variation in total sulfur content for both oxide and sulfide waste rock, suggesting "that the samples are not statistically representative of the actual sulfur content of the waste rock." (pp. 4-51,55) Furthermore, "(d)ue to the selection of composite samples with total sulfur content below the statistical mean, the results of the humidity cell tests may not represent the overall acid generation potential of the waste rock." (p. 4-55) Because the humidity cell test results indicate "low acid neutralizing potential," the EIR/EIS states that "it is essential to determine the acid generating potential of any high sulfur material within the waste rock profile during mine operations and before deposition to the waste rock dump." (pp. 4-56,57) (emphasis added)

It appears that there are insufficient data upon which to base the conclusion that the waste rock materials are "nontoxic to aquatic life, with low acid generation potential and should be classified as Group C waste." (p. 2-9) Although there will be diversion ditches to collect and divert run-off and precipitation from a 1000-year, 24-hour storm event, the waste rock facility design contains "no provisions for a lining and leachate collection system" and a Contingency Plan has yet to be developed. (pp. 4-46; 2-32; 4-63) The document also states that if testing indicated a potential for acid rock drainage, it would be treated with best available technology, which might include "encapsulation of the waste and treatment of the effluent." (p. 4-63)

Without liners and a collection system, there would be no means of containing ARD should an acid-generating potential become a reality. Why are these protective measures not required? The Contingency Plan should be developed as part of the environmental review process and encapsulation and effluent treatment should be described and assessed for effectiveness in the EIR/EIS. Acid rock drainage could be a long-term, distant future impact from the project's waste rock dump which will cover 206 acres and contain 85.7 million tons of rock. (p. 2-8) Reclamation scheduling indicates that the terminal phase of reclamation will take one to two years following cessation of mining and that post-closure monitoring will mean an additional one to five years. (p. E-28) I assume this means that the Company's presence and responsibility could end between two and seven years after the eight-year operations period. If ARD becomes a problem after the Company completes its monitoring, what recourse will Lassen County have and, more importantly, what physical measures will be feasible to stop acid run-off into Preston Canyon and Willow Creek?

One alternative to the Proposed Action, which would only partially bench the waste rock dump, is complete benching to the toe of the dump. This alternative would increase stability, provide additional benches for revegetation, and reduce run-off and sediment

7-2-1

The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.

7-3-1

yield by as much as 30%. (p. 4-68) The EIR/EIS is unclear as to why this alternative is rejected; it does state that an "additional 21 acres of important Jeffrey Pine/Mountain Shrub and Upland Shrub habitat would be lost." (p. 4-147) This loss is considered insignificant and certainly pales when compared to the loss of 296 acres of Jeffrey Pine/Mountain Shrub and 244 acres of Upland Shrub, which, perhaps as an indication of the preparers' biases, is not regarded as "important."

The tailings impoundment, covering 131 acres, is designed to hold 9.6 million tons of mill tailings deposited at a rate of 3,500 tons per day. It will have a single liner and be designed as a zero-waste facility. (p. 2-23) The heap leach pad, covering 199 acres, will have double liners and a leachate collection and recovery system. (p. 2-15) The fenced and netted process ponds, with double liners and a LCRS, will cover 23 acres. (p. 2-17)

The EIR/EIS concludes that design features of the tailings impoundment and the heap leach pad should provide protection from surface water impacts. However, it qualifies that conclusion with the following:

Potential impacts do exist if ore processing results in mine waste with physical and chemical characteristics that are significantly different than the laboratory samples tested. Surface water quality could be significantly impacted if the waste degrades physically and chemically and produces acid rock drainage. Other potential impacts would also include leaching of heavy metals, lowering of pH, and the precipitation of gypsum in the tailings, thereby changing the physical and chemical characteristics of the tailings. These changes may affect the behavior of the tailings, and, therefore, original design assumptions could become incorrect. (p. 4-57)

7-3-4

Because the EIR/EIS raises the possibility of changes in tailings characteristics, incorrect "design assumptions" and significant water quality impacts, the document should continue the scenario by disclosing what those water quality impacts would be and how they would affect wildlife, fish, and the aquatic ecosystem. The document should also discuss what kind of design changes would be needed in such an event and whether correction of the situation would be possible.

7-3-5

To achieve a zero discharge system, liners and a leakage detection monitoring system will be required for the heap leach pad and solution ponds. Lining failures would be detectable through the leakage detection monitoring system, but it is unclear what measures will be employed to contain and dispose of acidic waste and/or heavy metals should leaking occur. The EIR/EIS indicates that contingency plans will be prepared for such events; again, those plans should be part of the environmental review and permit process to ensure that, in fact, there are practicable and effective measures ready for

7-3-1

This alternative was not rejected, it has been identified as a preferred alternative. Please see Section 2.1. Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

7-3-4

Please see Section 4.2.6.2. Speculation of design changes or corrective actions required to remediate the situation are beyond the scope of this document. Tailings characteristics are described in Section 2.2.4.2. A Geochemical Sampling and Contingency Plan has been established by LGMI for the Project. (Appendix M). Water quality standards will also be covered under the CRWQCB permit, and are discussed in the MCP Appendix D.

7-3-5

A leak detection system is part of the design of the heap leach pad. Please see Section 2.2.3.2 and 2.2.6.1. Please see the Spill Prevention and Control Countermeasure and Emergency Response Plans in Appendix L, and the Geochemical Sampling and Contingency Plan in Appendix M.

implementation should the need arise.

The tailings impoundment has only a single liner with no sub-drain for collection of potential leachate. (p. 4-64) Why? If the possibility, as identified in the EIR/EIS, exists for changes in the tailings, resulting in acid drainage and heavy metals leachate, then the facility should be subject to the same requirements as the heap leach pad and solution ponds, i.e., double liners and a leachate collection and recovery system, and a contingency plan for collecting and disposing of the pollutants should be incorporated into the environmental review and permit process.

The proposed project will require fresh water at a rate of 1,000 gallons per minute over the eight-year operations period. (p. 2-31) This supply will come from wells drilled near Bunselmeier Spring to tap a deep regional aquifer. (p. 3-42) The EIR/EIS concludes that the drawdown of 78 feet in the Bunselmeier Spring area after seven years of pumping would have "little or no effect on the regional groundwater system." (p. 4-58) However, mitigation measures for the project include reevaluation of the model should monitoring indicate that the 78-foot estimate is being exceeded to "ensure that predictions of no noticeable affect (sic) to groundwater remain valid." (p. 4-62) If a 78-foot drawdown is insignificant, what level would affect the groundwater system? How would the region's hydrology -- groundwater and surface water -- be affected by an overdraft of the deep water aquifer?

Bunselmeier Spring and other springs and seeps in the area are part of a shallow, perched groundwater system, which would not be impacted by the Project's deep aquifer wells. (p. 4-59) Pit operations, however, will disrupt shallow groundwater flows and recharge of this system, resulting in impacts to seeps and springs, including the Bunselmeier Spring. (pp. 4-59,60) The conclusion is that "(t)his impact is not considered significant." (p. 4-60) The EIR/EIS does not identify the sources of water for the Silva Flat Reservoir or Dillon Lake, although both are important waterfowl areas. Fig. 3.5-2 indicates that Silva Flat Reservoir is supplied by a drainage coming out of the southwest quarter of the Project boundary. Could disruption of the shallow plumbing in the Project area affect flows into Silva Flat? How will loss of recharge and spring functions affect other surface waters and use by wildlife?

Wildlife/Fisheries: The EIR/EIS identifies a number of habitat types and associated wildlife species that will be lost or impacted by the Project. Approximately 950 acres of these vegetation types will be lost due to the Project. (p. 4-23) This includes 355 acres of Low Sagebrush, 244 acres of Upland Shrub, 296 acres of Jeffrey Pine Mountain Shrub, 13 acres of planted Grassland and 35 acres of native Grassland, and 6.55 acres of Wetlands, plus 80 feet of permanent stream channel and 1,315 feet of intermittent stream channel. (pp. 4-24,25,26,27) Wildlife species identified with these habitats and/or found within the area of disturbance include sage grouse, mule deer, pronghorn antelope, and nesting pairs of goshawk, golden eagles, and prairie falcon. (pp. 4-36,37) The Modoc sucker, a Federally-listed Endangered Species, may utilize Willow Creek. (p.

7-4-1

Engineered design features and operational strategies of the tailings impoundment eliminate the need for a double lined system. An LCRS system is part of the design. Please see Section 2.2.4.1.

7-4-2

Groundwater depletion is not a probable or realistic impact of the proposed Project. The hydrogeologic performance of deep aquifer basin was evaluated utilizing extremely conservative recharge and storage parameters. Expected drawdown is slight in a regional sense. Also, by using a well field extraction system, drawdown is spread out over the basin, thereby minimizing significant drawdown in one spot. Natural water table fluctuations can be as much as 20 to 30 feet.

7-4-3

Silva Flat Reservoir is a man-made impoundment which captures and impounds surface water runoff. Dillon Lake occupies a shallow natural basin which also captures and impounds surface water runoff from upgradient catchment areas. Water levels in each water body are likely inter-related due to the elevated groundwater levels caused by Silva Flat Reservoir and the geomorphology of the Silva Flat basin.

The bottom of the pit will be approximately 200-feet below the maximum water surface level of both water bodies. The observed potentiometric (water) surface is 300-feet below the pit bottom. Moreover, the potentiometric gradient trends to the northwest (see Figure 3.6-1). Thus the available data indicates that pit operations would have no effect on groundwater conditions which could influence Silva Flat Reservoir or Dillon Lake.

There will be no loss of recharge. Impacts to water resources are described in Section 4.2.6.

The Applicant has also committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project to return these re-routed waters to the subsurface.

7-4-4

CDFG and the Applicant, LGMI, have developed a Wildlife Habitat Mitigation and Management Plan (HMP). An agreement is under negotiation, which specifies the obligations of the Applicant. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 and 4.2.5.5, have been revised to reflect the contents of this plan. The Mitigation Plan is located in Appendix I.

7-5-1

4-38) A total of 86 species of birds were observed in or near the Project area during field surveys in 1989 and 1990. (p. 3-27) Field investigation recorded 21 mammal species in the Project area (p. 3-28) Aquatic invertebrates were sampled in Willow Creek, but apparently no surveys were conducted for the area's herpetofauna, which could be associated with rock outcrops, seeps, springs, and stream ecosystems. Such surveys should be conducted as part of the environmental review process.

This Project will have immediate and direct impacts on species associated with the area of disturbance:

7-5-3

Two sage grouse leks, which support at least 32 birds, will be destroyed, as well as 355 acres of Low Sagebrush vegetation and 35 acres of native Grassland habitat, utilized as summer range. (p. 4-36) Although mitigation measures to relocate the grouse are proposed, the ultimate reality will most likely be the extirpation of this isolated population and with it, the loss of its genetic variations. The EIR/EIS concludes that reestablishment of the Low Sagebrush vegetation community is "unlikely" which means that the loss of this habitat type will be "long-term." (p. 4-24)

7-5-4

Mule deer will be impacted by the loss of 550 acres of summer range in the Mountain Shrub and Upland Shrub habitat types. The population is currently estimated at 20 deer/square mile; loss of habitat, disruption of migration patterns, road kills, and poaching will cause a reduction in the local population. (p. 4-36)

Pronghorn will be impacted by loss of 355 acres of Low Sagebrush and 35 acres of native Grassland, which are used for summer range. Loss of habitat, disturbance, disruption of movement patterns, and poaching will result in a reduction in the local population. (pp. 4-36, 37)

Wildlife associated with the timbered habitat provided by the Jeffrey Pine/Mountain Shrub vegetation type will be impacted by the loss of 296 acres. Loss of this habitat will be long-term, since restoration of the components, structure, and function of a forest ecosystem requires at least 100 years. A nesting goshawk pair will be impacted by the loss of this habitat. (p. 4-37)

Other identified wildlife adversely affected by the Project include a nesting pair of golden eagles and a pair of prairie falcons. (p. 4-37)

7-5-8

The Project will destroy 6.55 acres of wetlands, which is "very important to wildlife." (p. 4-38) Species associated with the wetlands were not identified in the EIR/EIS, an omission that should be corrected in the final document. Loss of both perennial and intermittent stream channels will also negatively impact wildlife and aquatic species, but species affected and the level of impact were not addressed in the EIR/EIS.

The EIR/EIS identifies potential impacts to the Modoc sucker resulting from hazardous materials spills into Willow Creek and sedimentation of habitat. (p. 4-38) The possibility of

7-5-1

Reptiles observed in the Project area are listed in Bio-Resources report dated October 1990, and have been added to the species list in Appendix G of the FEIS. No amphibians were observed in the Project Area.

7-5-3

A revised sage grouse relocation plan is included in Appendix G. The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond lek. Counts will be done in July and August of 1991 to check on breeding success. A winter count will be conducted in February 1992 to check on wintering resident or migratory population.

The Habitat Mitigation Plan states that if the sage grouse plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. The Mitigation Plan is included in Appendix I.

The criterion for extirpation is that less than 3 displaying males are observed at the new lek or other leks that may arise in the vicinity, for three consecutive years.

7-5-4

The impacts to species and habitats listed in paragraphs 4 through 8 have all been addressed by the Habitat Mitigation Plan and Wetlands Mitigation Plan located in Appendix I. The mitigation Sections 4.2.5.4 and 4.2.5.5 of the FEIS have been revised to reflect these specific mitigation measures.

7-5-8

As stated in Section 4.2.4.2, a total of 6.55 acres of wetlands, 80 lineal feet of permanent stream channel and 1,315 lineal feet of intermittent stream channel are impacted by the Proposed Action. These impacts are considered long-term for habitat value and short-term for cover value since reclamation would include these areas. A mitigation plan for impacts to wetlands has been prepared by the Applicant in conjunction with the Corps of Engineers 404 Permit, and is included in Appendix I.

Wetlands are regulated by the Clean Water Act (CWA) of 1972. The CWA is administered by the Corps of Engineers and the Environmental Protection Agency (EPA) in a joint effort defined by a memorandum of understanding between the two agencies. The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation off-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. The proposed mitigation plan will create approximately 18.5 acres of seasonally inundated wetlands. See Section 4.2.4.

- 7-6-1 The waste rock dump Geochemical Contingency Plan is located in Appendix M. The wildlife impacts and mitigation Sections 4.2.5.2 - 4.2.5.5 and water resources Section 4.2.6 all include updated information on the acid generation potential of the waste rock dump.
- 7-6-2 The culvert crossing was a multi-agency effort involving the USFWS, CDFG, Caltrans, and the County Road Commission to ensure the best design, installation, and maintenance practices for safety as well as fish passage, especially the Modoc sucker. There are currently two water sampling stations set up on Willow Creek, to monitor water quality and quantity.
- 7-6-3 CDFG and LGMI have developed a Wetlands Mitigation Plan located in Appendix I. The plan states that approximately 18.5 acres of self-sustaining wetlands will be created which will replace the lost habitat. The impacts and mitigation sections 4.2.5.2 and 4.2.5.5 for wetlands and riparian habitats have been revised to reflect the contents of the Wildlife and Wetlands Mitigation Plans both located in Appendix I.
- 7-6-4 Further research (Bio-Resources, May 1991, Addendum, *Antennaria flagellaris* at Hayden Hill, California) indicates the 20% estimate is correct for the known population. However, the large amount found in the studies were located in easy access areas, adjacent to roadways. Large tracts of land remain unsearched. If the area searched and numbers found are correlated to the available habitat unsearched, the population is estimated to be quite large. In addition another population of equal size and density was located near Silva Flat. We believe the impact to this species is insignificant based on the present research, and that additional study is unwarranted. It is not the policy of any of the involved agencies to transplant threatened or endangered species. Protection is the key in these cases. We believe the impacts to these species have been adequately avoided and minimized as addressed in Section 4.2.4
- 7-6-5 Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2 through 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N. The USFS feels the FEIS satisfies their requirements for MIS species.

contamination of Willow Creek from acid rock drainage and heavy metals should also be assessed as a risk to the survival of the local population. According to Peter Steinhart's 1990 publication, California's Wild Heritage: Threatened and Endangered Animals in the Golden State (Fish and Game, California Academy of Sciences, and Sierra Club Books), the Modoc sucker is found in sections of Modoc County streams with low summer flows and large, shallow, muddy-bottomed pools, especially pools shaded by trees. Artificial barriers placed in streams to make ponds may disrupt migrations necessary for breeding. The ponds also seem to favor predators -- introduced brown trout and bass -- under drought conditions. After the 1977-78 drought, Dr. Peter Moyle estimated that only 1,500 Modoc suckers survived. The persistent drought conditions of 1990 damaged and reduced Modoc sucker habitat to the point that the world population survives in only a handful of pools.

A Conceptual Mitigation Plan for the loss of 950 acres of five different habitat types and their associated species is presented in the EIR/EIS in Table 4.5-2. It relies on enhancement of existing habitat, monitoring, protection of adjacent habitat, and record keeping and reporting. No provisions are made for creation of replacement habitat elsewhere. Both Federal and State policies require "no net loss" of wetlands. EPA review of Corps of Engineers 404 permitting process will require "no net loss." The mitigation plan does not provide for creation of wetlands, but only for "enhancement of nearby or existing wetlands." This does not meet the "no net loss" policy of Fish and Game and Federal agencies.

Only one population of creeping pussytoes (*Antennaria flagellaris*) was known to exist in the Hayden Hill area prior to surveys in the fall of 1989. Those surveys located 46 new populations of the species. (p. 3-18) The population which would be destroyed by the heap leach pad represents 20% of the individuals presently known to exist in California. (p. 4-27) The destruction of 20% of the known individuals of a "species of concern" and the loss of its genetic variations are significant impacts, which require mitigation. A plan should be developed for preserving this genetic variations, including transplanting and collection of reproductive material.

The golden eagle, goshawk, and prairie falcon are all designated as "species of special concern" by the State. Table 3.5-1 lists the goshawk, golden eagle, and prairie falcon as USFS and BLM "Sensitive" species. Species listed as "Sensitive" by the U.S. Forest Service must receive "special management...to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing." (F.S. Manual, Section 2672.1) Section 2670.32(2) requires that as part of the NEPA process, the Forest Service must "review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species." Section 2670.22(3) requires the Forest Service to "develop and implement management objectives for populations and/or habitat for sensitive species." Section 2672.1 provides that "(t)here must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat, and on the viability of the species as a whole." Has the Forest Service complied with

these requirements? This information should be included in the EIR\EIS for agency and public review.

Federal agencies must adhere to specific provisions of the Endangered Species Act in management of listed species. Relative to the Modoc sucker, the Forest Service must comply with Section 7 of the Act which requires consultation with the U.S. Fish and Wildlife Service "to insure that any action it authorizes, funds, or carries out...is not likely to jeopardize the continued existence of any

endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary...to be critical...." [16 U.S.C. 1536(a)(2)] In addition, the Secretary "shall develop and implement plans...(recovery plans) for the conservation and survival of endangered species....[1533(f)] Has critical habitat been designated for the Modoc sucker? Has a recovery plan been prepared? Has the Forest Service consulted with the U.S. Fish and Wildlife Service relative to the authorization of this project? This information should be included in the EIR\EIS.

Reclamation: The Project will result in the devegetation of 950 acres and "modification" of the topography and landscape of the site, including the replacement of the summit of Hayden Hill with a 176-acre pit; creation of a 202-acre waste rock dump, 131-acre tailings impoundment, and 199-acre leach pad; and construction of facilities and roads. (Table 1.5-1, p. 4-10) The pit will extend .9 miles in length and vary in width between 2100 and 2725 feet and in depth, 380 to 700 feet. (p. 2-3) The waste rock dump will be partially benched from 6150 feet to 5750 feet with the angle of repose below that level. (Fig. 2.2-2) The heap leach pad will have a capacity of 35.7 million tons at a height of 120 feet. (p. 2-15) The tailings impoundment will contain 9.6 million tons at the end of operations. (p. 2-23)

Despite the magnitude of these alteration on the landscape, the EIR\EIS concludes that these "direct, long-term modifications...would not adversely impact the topography of this area." (p. 4-10) I disagree. The natural topography of the land will be significantly altered and the integrity of the landscape degraded ecologically and visually. The intent of the Reclamation Plan is not to restore original contours or even original vegetation, but only to stabilize soil movement and revegetate some, but not all, surfaces, such as the benches, but not the slopes in between.

The Reclamation Plan, contained in the EIR\EIS, is not the detailed, site-specific plan that should be available to the permitting agencies and the public as part of the environmental review process. Revegetation studies have apparently not been completed, but only "planned." (4-23) Not until construction and mine development will Project personnel work with others "to produce a viable, practical and cost-effective closure and reclamation program...." (p. E-15) The question of revegetation success is of critical importance to the public and the permitting agencies as they consider the impacts and trade-offs of the Project. How can potential environmental impacts be properly assessed without

7-7-3

Five streams have been identified as Critical Habitat for Modoc sucker (Turner, Washington, Hulbert, Rush, and Johnson Creeks). Willow Creek is outside the Critical Habitat. Willow Creek was identified as a potential site to expand the current population and distribution of the Modoc sucker in the Modoc Sucker Recovery Action Plan (1983). The plan was developed jointly by USFS, CDFG, and USFWS. (Biological Assessment of the Hayden Hill Project, Potential Effects of Proposed Mining Activities on Federally Listed Species, July 1991). The Biological Assessment is on file with the USFS, BLM and the County.

Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2 through 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.

7-7-4 A revised Reclamation Plan is located in Appendix E.

Section 4.2.2.4 has been revised to provide a more thorough analysis of the impacts to topography. In a regional context, the direct long-term modifications to topography would not be adverse. However, modification of Hayden Hill by the pit will introduce an unnatural landform to the region. This modification will result in an unavoidable adverse impact which is significant. Visual and ecology impacts are discussed in Chapter 4.0.

The revised Reclamation Plan (Appendix E) includes more detail on reclamation of the site. We feel that sufficient information is provided to assess the success of the reclamation. We disagree with your opinion of the necessity of research as a part of the Reclamation Plan. We feel the research is necessary to provide site specificity to the plan. Future research will contribute to the mines ability to meet the success criteria identified in the Reclamation Plan.

7-7-6

information on the effectiveness of revegetation and the types of vegetation which will ultimately become established after closure?

7-8-2

Topsoil will be stockpiled and the intent is to spread 12" of topsoil on all surfaces to be revegetated, but the EIR/EIS also indicates that there may not be sufficient topsoil to meet this standard. (p. 4-20) It also indicates that the loss of timber-producing soils cannot be mitigated sufficiently to insure timber production and that the destruction of soil duripans will preclude reestablishment of the original Low Sagebrush community.

(pp. 4-21,24) The water-holding capacity of the soils in the impact areas is already low and will be further reduced by "disturbance-type activities" and eliminated by "excavation-type activities" to a point which "may adversely affect the regeneration of perennial or native plant communities..." (p. 4-12,18) Physical and chemical characteristics of the soils in the impact area will become more homogeneous as a result of stripping, mixing, scraping, grading and placement activities. One effect of this situation could mean that a different vegetation type will out compete the original vegetation, as will be the case for the Low Sagebrush community. (p. 4-19)

7-8-4

It is unclear what is meant by the statement on page 4-32 that 296 acres of Jeffrey Pine\Mountain Shrub vegetation, 355 acres of Low Sage Brush vegetation, 244 acres of Upland Shrub vegetation, 48 acres of Grassland vegetation and 6.55 acres of wetland vegetation "will be reclaimed." The document continues: "...it will take time, if ever, for the vegetation to become sufficiently established to provide the habitat qualities it once had." So this impact is considered a "long-term, adverse unavoidable impact and is considered significant." What does "reclaimed" mean?

7-8-5

The EIR/EIS should clearly state what vegetation types will replace the ones destroyed by the Project. The document admits that restoration of timber stands will not be possible, but it doesn't indicate what kind of vegetation can be expected on the 296 acres of Jeffrey Pine\Mountain Shrub community. The Low Sagebrush community will not be reestablished; what will replace it after reclamation? If revegetation is accomplished almost exclusively with non-native grasses, as implied by the list of seed mixtures in the Reclamation Plan, what types of vegetation communities can be expected to become established in the mid- and long-term and what ecological and habitat functions will they provide?

7-8-6

Every effort should be made to revegetate with native species in order to retain a measure of their original habitat function. The Reclamation Plan should provide for the collection of seeds and plants for use in revegetation after operations are completed. This will increase the probability of successful revegetation and retain site-adapted genetic variations. Revegetation success should be based on density and diversity, rather than simply percent cover. Plots should be established to determine the density of plants (number of individuals per plot) and diversity (number of different species per plot) with success measured against standards for each of these criteria.

7-8-2

It is anticipated that, with the collection and use of the B horizon soils, sufficient topsoil will be available. See Sections 3.3 and 4.2.3 for more information on this subject.

7-8-4

The statement at page 4-32 of the Draft EIR/EIS refers to the mitigation measures shown as bulleted items on page 4-30, in which all areas which were not proposed to be reclaimed by the Proposed Action will be reclaimed. The Unavoidable Adverse Impacts are those which remain after the mitigation measures are applied.

7-8-5

The revised Reclamation Plan (Appendix E) addresses the commentor's concerns.

7-8-6

Section 4.8 of the revised Reclamation Plan (Appendix E) includes criteria for monitoring cover, density, species richness and the use of native species. We believe this is sufficient.

7-9-1

Page E-29 of the Reclamation Plan indicates that "reclamation costs will be \$2,665 per acre or \$2,531,750 for the project." The implication is that this will be the total bond required for the Project. The costs of dismantling and removing buildings and structures and closure and post-closure monitoring or any additional requirements which might be amended to the plan by permitting agencies are not included in the reclamation cost analysis. (p. E-29) The bond should be sufficient to cover the costs of all reclamation, including removal of the buildings and structures, post-closure monitoring, and any additional reclamation requirements imposed by the regulatory agencies. The purpose is to ensure complete implementation of a detailed, site-specific reclamation plan which has been developed and agreed upon prior to commencement of operations.

Thank you for consideration of these comments.

Sincerely yours,

Susie Van Kirk
Susie Van Kirk,
Conservation Chair

cc: Trent Orr, Attorney-at-Law
Nobby Riedy, The Wilderness Society
Deborah Reames, Sierra Club Legal Defense Fund
Glenn Miller, Sierra Club Mining Subcommittee
Philip Hocker, Mineral Policy Center

7-9-1

Section 4.14 of the revised Reclamation Plan (Appendix E) includes a detailed cost breakdown of reclamation at the site. These costs include all aspects of reclamation. This plan was reviewed by all signing agencies as well as the Dept. of Mines and Geology to ensure compliance with SMARA.

Carl Weidert
Conservation Chairman
Shasta Group Sierra Club
Rt. 2 Bx. 175
Shingletown, CA 96088

Lassen County Planning Department
707 Nevada Street Room 236
Susanville, CA 96130
Attention Merle Anderson

RECEIVED

MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

Dear Sir:

The following are comments on the Draft EIR/EIS for the Hayden Hill Project. We believe that this report represents the minimum, with the exceptions cited below, documentation needed to address the impacts of a large open pit cyanide heap leach mine. The EIR/EIS, Mitigation Compliance Program and Reclamation Plan, with the exceptions cited below, appear to be in compliance with applicable County ordinances, State and Federal laws and regulations, and is appropriate for an area of lesser environmental concern as it not close to historic or developed areas or near Wilderness or Park areas or areas of critical environmental concern.

8-1-2

Introduction Chapter 1:
The statement in section 1.3.2 that Lassen County does not have jurisdiction over mining on Federal or State lands should be corrected. Under SMARA and other state laws and the MOU's between the USFS and BLM Lassen County does have Jurisdiction. We also do not believe that the Plan prevents all "unnecessary or undue degradation" section 1.7. A new waste dump alternative suggested below would help achieve this objective as would suggested mitigations.

8-1-3

Alternatives Chapter 2:
Another waste dump reclamation alternative should be evaluated. We believe that the best visual results would be obtained by smoothing and revegetating the top of the waste dump, down to the elevation where it is visible from Highway 139, as shown from Figure 4.11.2 View point number 1. By revegetating and smoothing the waste dump top travelers would probably not notice the disturbance. Below this elevation complete benching and partial revegetation would be used. The remaining environmental consequences should be equal to the Preferred Alternative.

8-1-4

We support the Partial Backfill Alternative. This Alternative is definitely possible as the Providence Pit will be mined between the two mining phases used for the Lookout Pit, Appendix E, 5.2. The waste rock from the last phase of the Lookout Pit could easily be placed in the mined out Providence Pit. This would reduce the height of the waste pile, reduce the visual impacts from Highway 139 and reduce open pit hazards.

8-1-5

We recommend that the project owner/ operator build and operate the power line and that it be removed when the mine closes rather than having it built by SVEC. 2.2.7.3. This will prevent residential sprawl, unfunded costs for services after the mine closes and reduce visual impacts.

Section 1.3.2 has been corrected as noted.

8-1-2

Three waste rock dump designs were studied in detail for environmental impacts in the Draft EIR/EIS: the Proposed Action, the Smoothed Waste Rock Dump Alternative, and the Complete Benching Alternative (Section 4.3.3). Benching the waste rock dump from the top to the 5,750-foot elevation is planned for the Proposed Action. The Complete Benching Alternative would require benching all the way to the toe of the dump. The Smoothed Waste Rock Dump Alternative would require the smoothing of the benches after completion of mining.

8-1-3

It was determined that an unbentched dump would be more susceptible to erosion than a bentched dump. Increased erosion would increase impacts to water quality and make reclamation more difficult. As a result, the Complete Benching Alternative has been identified as the preferred alternative by the BLM and USFS.

To smooth the benches of the entire waste rock dump, as in the Smoothed Waste Rock Dump Alternative, the Project life would have to be extended an additional one to two years. An increase in Project life would result in an increase in water and fuel consumption, air emissions, and socioeconomic impacts. This alternative would have completely mitigated the visual impact from Highway 139 of the waste rock dump, but only with complete reclamation success. As discussed above, successful reclamation would be more difficult on an unbentched dump.

Only the top of the waste rock dump will be viewed from Highway 139 (Figure 4.11-2). However, the actual area of the waste rock dump that would have to be smoothed to achieve the goals of a partial smoothing alternative represents 30 to 50 percent of the total area of the dump (Figures 2.2-8 and 4.11-2). The Project life would have to increase, resulting in the associated negative impacts. In addition, the unbentched portion of the dump would be more susceptible to erosion. A partial smoothing alternative would result in many of the same negative impacts as the Smoothed Waste Rock Dump Alternative and the unbentched portion of the Proposed Action waste rock dump.

Successful reclamation of the bentched waste rock dump will result in landforms and vegetation types and patterns that are harmonious with the surrounding landscape, when the Reclamation Plan and visual mitigation measures are followed. The visual analysis completed for the Hayden Hill Project determined that the visual impact of the top of the waste rock dump from Highway 139 will not be significant.

Because the visual impact of the bentched dump will not be significant and because of the negative impacts generated by smoothing the upper portion of the waste rock dump, a partial smoothing alternative of this nature will not be considered in detail.

8-1-4

The minor benefits that would result from this alternative do not outweigh its negative impacts. The waste rock dump would only be slightly decreased in size so there would be very little change in the visual impact. There would be little change to the open pit hazard. During reclamation, the pit will be fenced, or a berm constructed, and posted with warning signs.

8-1-5

Please see Section 2.1. Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

- 8-2-1 To best protect resources, we believe that a drip system only be used on the heap leach piles, 2.2.3.2 and 2.3.1.7. This would eliminate drift problems and use less water. We also believe that an enclosed cyanide system is the only system acceptable by today's standards, 2.3.1.7. Even properly netted systems pose a threat to birds, bats and small mammals. It should be noted that under the Migratory Bird Treaty Act zero mortality of migratory birds is the only legally acceptable standard. We note that drip and enclosed processing systems are now in use or are proposed for use in several western mines, including Bond Gold at Beaty, NV and Viceroy Gold in the Eastern Mojave Scenic Area, CA.
- 8-2-2 We recommend the Facilities Location Alternative 3. This Alternative would provide the best potential for maintaining the sage grouse population during and after the project.
- 8-2-3 We would prefer the relocation of the Fire Tower to the Ash Creek Wildlife Area if possible.
- 8-2-4 Chapter 4 Environmental Consequences:
Soil 4.2.34: Soils for the different vegetation types should not be mixed and should be kept in separate piles. Soil B horizons should be saved especially for Jeffery pine and shrub soils. B horizon soil should be kept in piles separate from 0 and A horizon piles. Separately saving soils and soil horizons will provide the depth and complexity needed to improve the restoration potential for shrubs and Jeffery pine. The appropriate mycorrhizal species for pine, shrubs and perennial grasses should be added to the soils to enhance revegetation potential.
- 8-2-5 Vegetation 4.2.41: Antennaria flagellaris, Twenty percent of the population and genetic component of any species is significant. The loss of this percentage of the California population requires mitigation and we reject the claim that it doesn't. Seeds of this species should be collected and saved. Plants grown from seeds or stolons of the population should be introduced to at least five suitable areas on BLM lands.
- 8-2-6 Jeffery pine: Regeneration of Jeffery pine/shrub lands is important for the biological and habitat pattern diversity of the area. Maintaining diversity has not been discussed anywhere in the document. We feel that such discussion is needed. As mitigation to promote and develop pattern diversity at least 25 one half acre or larger plots on the waste pile should be created with deeper soils. At least two feet of top soil from forest types should be placed on three feet of B horizon soil. Western juniper should also be planted on forest soils.
- 8-2-7 Environmental impacts from the loss of USFS and BLM timber and sage habitat we feel should be mitigated by the project owner/operator purchasing equivalent amounts of private lands with similar resources and donating the lands to these agencies. Mitigation for vegetation loss and stream damage could also be made up by the project owner/operator buying the existing or portions of existing grazing leases and
- 8-2-1 The Applicant recognizes the potential benefits of using a system composed entirely of drip emitters, which are described in more detail in Section 2.2.3.2. However, the use of drip emitters in a heap leach solution application is a new technology and, as with any new technology, it has yet to be proven that an operation can rely solely on their use as a means of continuous production. A number of mining operations, including Amex Gold's Sleeper and Wind Mountain mines, have used drip emitters with varying degrees of success. In the case of Hayden Hill, a closed system use of sprays in conjunction with drip emitters is necessary for solution balance.
- The Applicant intends to use both spray and drip emitters to obtain the benefits of each. With this flexibility, the Applicant will be able to operate the heap leach circuit in an efficient, environmentally sound manner while responding to dynamic operating conditions.
- In discussions with Nevada Department of Wildlife personnel, spray drift has no identified impacts and no mortalities have been attributed to spray drift. Prevention of ponding on the heap leach surface is of greater concern than spray drift. Observations by NDOW personnel shows that drip emitters may be less likely to cause ponding at mines where ponding is a problem. NDOW personnel indicated that while large 2 1/4" grid netting does not exclude small and some medium size birds, the 1 5/8" grid does deter even small passerines from entering the ponds. Also net entanglement is negligible with the smaller size netting.
- In regard to the enclosed cyanide alternative, see the Habitat Mitigation and Management Plan, Appendix I. The Applicant agrees to use 1" netting on all solution process ponds, inspect the netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2 Cyanide on Wildlife, 2.2.8.13, Sodium Cyanide, and 2.2.3.2 and 2.3.1.7 in the Proposed Action have been revised to address this concern. Netting has proven to be effective in minimizing wildlife mortalities at 95 operating Nevada mines (King and Lamp, 1991).
- 8-2-2 The sage grouse mitigation plan includes delaying impacts to the lek. See the Habitat Mitigation Plan in Appendix I, and the mitigation Section 4.2.5.4.
- 8-2-3 The site for relocation of the fire tower will be the Bieber Museum. The Ash Creek site was more popular, however, concerns related to this site were the potential for security problems, and satisfying fire and safety codes which would require the construction of a water line line. See Section 4.3.6.2.
- 8-2-4 Due to similarity of soil horizons and the low organic matter content of the A-horizon, soil horizons will not be segregated. Please also refer to Section 4.2.3.3 and Appendix E.
- 8-2-5 Further research (Bio-Resources, May 1991, Addendum, Antennaria flagellaris at Hayden Hill, California) indicates the 20% estimate is correct for the known population. However, the large amount found in the studies were located in easy access areas, adjacent to roadways. Large tracts of land remain unsearched. If the area searched and numbers found are correlated to the available habitat unsearched, the population is estimated to be quite large. In addition another population of equal size and density was located near Silva Flat. We believe the impact to this species is insignificant based on the present research, and that additional study is unwarranted.
- 8-2-6 Comment acknowledged. We feel maintaining sufficient diversity is covered adequately in the revised Reclamation Plan (Appendix E). Maintaining diversity is a goal of reclamation.
- 8-2-7 Comment acknowledged. Appendix I includes the wildlife and wetlands mitigation plans. Section 4.2.5.4 has been revised to address the mitigation measures required for habitat loss. Mitigation measures include creation of an 18.5 acre wetland in Section 2, and enhancement and protection of 35 acres of meadow in Anderson Ranch.

- 8-3-1 CDFG and the Applicant, LGMI, have developed a Wildlife Habitat Mitigation and Management Plan. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 and 4.2.5.5, have been revised to reflect the contents of this plan. The Mitigation Plan is located in Appendix I.
- 8-3-2 The road design has been completed to minimize side cast material. See Section 2.3.7.1 and Section 3.2 of the revised Reclamation Plan (Appendix E).
- 8-3-3 LGMI will not use an herbicide on the topsoil stockpiles which has a residual effect greater than the time the soil will be left in the stockpiles. This will be under the direction of the County Agricultural Commissioner.
- 8-3-4 The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 - 4.2.5.5, and tables have been revised to reflect the contents of this agreement. The Mitigation Plan is located in Appendix I.
- 8-3-5 Grazing management is discussed under the sage grouse and pronghorn mitigation measures. The applicant will manage grazing on the properties they control. No changes to USFS grazing plans are proposed. The BLM will suspend the AUMs inside the Project Area for the duration of the project.
- 8-3-6 The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond lek. Passive relocation attempts will be made during those years. The Mitigation Plan states that if the sage grouse relocation plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 23-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.
- 8-3-7 The culvert crossing was a multi-agency effort involving the USFWS, CDFG, Caltrans, and the County Road Commission to ensure the best design, installation, and maintenance practices for safety as well as fish passage, especially for the Modoc sucker. There are currently two water sampling stations set up on Willow Creek, to monitor water quality and quantity.
- 8-3-7 The USFS, USFWS, and the CDFG have all helped develop and review the Emergency Response Plan for Modoc sucker. The Emergency Response Plan is included in Appendix L with the SPCC Plan. The CRWQCB has also received copies of this document.

- 8-3-1 donating them to the BLM or USFS for habitat values. This action would also promote wildlife mitigation measures for pronghorn, mule deer and sage grouse. Wetland loss should be mitigated with the DFG recommendation of creating two 20 acre wet meadows, Appendix I 1.2.1.
- 8-3-2 Vegetation should be protected in the Hayden Hill road realignment by allowing no side cast of material.
- 8-3-3 Weed control should not use herbicides on soil piles as this could inhibit future reclamation.
- 8-3-4 Wildlife and Aquatic Biology 4.2.5; Real mitigation will require the purchase and protection of equivalent habitat. The mitigation measures recommended by the DFG in Appendix I 1.2.1 Should be adopted. Habitat protection is enhanced by the exclusion of cattle. We feel that the purchase of and retirement of grazing rights would do the most for wildlife. Without this none of the grassland or low sage brush or shrub land antelope, sage grouse or mule deer habitat improvement mitigations proposed will be truly effective or long lasting. Under no circumstances should BLM or the USFS transfer cattle AUM's from lost federal or private lands to other federal lands as is proposed for mitigation in the Land Use Section 4.2.9.6.
- 8-3-5 The Facilities 3 Alternative should also be used as it keeps the sage grouse lek.
- 8-3-6 The culvert crossing at Willow creek should be monitored during the life of the project. If problems are found they should be promptly corrected. If problems continue through out the project life, a trust fund should be created to remedy future problems.
- 8-3-7 The WQCB should also review the field procedures for accidental spills.
- 8-3-8 Water Resources 4.2.6; Water is vital in this very dry country. We do not believe that deep aquifers are necessarily completely isolated from all shallow perched systems, as is postulated in the document, 2.2.7.4, 3.6.3.1, 3.6.3.2, 4.2.6.3 and 4.2.6.4. The deep aquifers must be recharged to some extent through leaks in shallow systems. Blasting vibrations may also cumulatively collapse and fill spring and seep channels and pores. Because of these possibilities there should be some mitigation provision for providing water to the shallow springs if they dry up, permanently if necessary with piped in water from wells or windmills.
- 8-3-9 Geochemical analysis of waste rock and ore body samples indicate that acid mine waste will not present a problem. There should be stated mitigation measures if these conclusions, in section 2.2.2.3, prove to be incorrect. What is the plan if rocks with acid producing characters are found? What is the best available technology that will be used and what problems does it have?

8-3-8

The Water Resources Section 4.2.6, has been revised to address the impacts and mitigation to the areas water resources. The MCP, Appendix E, has monitoring requirements on the areas seeps and springs. The permit from the CRWQCB also has monitoring requirements.

A regionally persistent confining layer overlies the regional groundwater (deep aquifer) system. Moreover, the results of hydrogeologic investigations (pump tests) have indicated that the system is hydraulically confined in the Project area. Thus the recharge area is most likely located some distance from the Project site. Please refer to Section 3.6.3 for a discussion of the hydrogeology of the Project area.

According to field data, there are six springs located within the Project boundary which demonstrate observable flow. Three of the unnamed springs located in Letterbox Canyon, display flow volumes not large enough for measurement. The other three springs are located along Hayden Hill Road. Daisy Dean Spring has an estimated average flow of 1 to 2 gpm. An unnamed springs in the same drainage has an estimated seepage rate of 1 gpm. Indian Springs has an estimated average flow of 3 to 5 gpm. These flow observations were made by KP in August of 1990. The flows from these springs subside to negligible volumes during the dryer summer months and in some cases dry up completely.

The flows from major springs in the Project area, such as Daisy Dean and Indian Springs, are not anticipated to be affected by Project operations. The springs are located in areas hydrogeologically separated from the minor seeps and springs around Hayden Hill.

The Applicant has committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project, to return these re-routed waters to the subsurface.

A wetlands mitigation plan for the Project (see final EIR/EIS) has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4.

The anticipated impacts to springs and seeps in the Project Area are considered relatively insignificant, in light of observed seasonal flows, and lack of significant impacts to established wetlands.

8-3-9

The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.

- 8-4-1 We feel that the leak detection systems for the heap leach pads and tailings impoundment should be capable of continuous detection not just monthly measurements as is proposed in Appendix K Table 2.2. Without this significant ground or surface water contamination from cyanide could occur before a problem is detected.
- 8-4-2 Air Quality 4.2.7:
The analysis of cyanide drift in 4.2.7.5 is superficial and incomplete. Wind velocities were not available for December through March, Table 3.7.1, the season with the strongest winds. There are no analysis methods given to support the claim that drift spray will remain on site. The Water Resources Section, 4.2.6, does not address the potential of drift to cause water quality problems especially from cumulative build up in dry periods. We feel that this needs to be critically analysed.
- 8-4-3 Socioeconomics and Land Use 4.2.8 & 4.2.8:
The impacts of the growth inducement from the power line are not fully disclosed in these Sections. We feel that the impacts to county infrastructure including costs from the projected 450 - 550 added population, 4.2.8.9, should be disclosed.
- 8-4-4 We feel that mining is not compatible with grazing for purposes of removal from the Williamson Act and that any land withdrawal should be subject to penalties.
- 8-4-5 We feel that mining prescriptions will need to be developed for the Modoc N.F. Forest Management Plan.
- 8-4-6 The socioeconomic costs to county services when the project is terminated were not discussed. We feel that they should be evaluated and disclosed. The analysis should include the impacts to the county from the loss of tax revenue and jobs.
- 8-4-7 Cultural Resources 4.2.10:
Previous mining activities or deposition processes could have buried cultural sites. There are no mitigation measures provided if buried cultural sites are located in mining operations.
- 8-4-8 Visual Resources 4.2.10:
We feel that the visual disturbance even with the proposed reclamation is way beyond the Partial Retention VQO standard. We also feel that it is incorrect to claim that the project will differ little from existing vegetatively recovering conditions. Bench or partially benched waste piles are definitely different from existing land forms. We feel that our proposed rounded top reclamation alternative combined with the Jeffrey pine biodiversity reclamation plan would greatly reduce visual impacts.
- 8-4-9 Visual impacts would also be reduced by removal of the power lines. If this is not done, then the visual impact of the power line should be reduced by combining it with existing

- 8-4-1 Comment acknowledged. The proposed water quality monitoring program described in Appendix K, is under CRWQCB permit jurisdiction.
- 8-4-2 Section 4.2.7.5 has been rewritten to provide more detail. Drift is a phenomenon of interest primarily with cooling towers where air flows counter-currently with water to attain high evaporation and cooling. Drift is not a concern at the Project site because of the method of applying the leach solution. Only very little drift could occur. The minor concentrations of HCN contained in the spray drift would degrade relatively rapidly to form ammonia and carbon dioxide. Potential for cumulative impacts to water quality are virtually non-existent.
- 8-4-3 This type of analysis would be speculative and is unwarranted in a document of this type. It is the intent of the CEQA guidelines that an EIR need not engage in a speculative analysis of environmental consequences for future and unspecified development.
- 8-4-4 The discussion on the land use impacts to Williamson Act lands must be read in conjunction with the discussion of impacts on rangeland uses (Section 4.2.9.4), soil (4.2.3), vegetation (4.2.4), and the revised Reclamation Plan.
- Rather than debate the compatibility of mining on agricultural preserve lands, the property owner has requested and the County is entertaining cancellation of the Williamson Act contract as it pertains to approximately 658 acres which would be disturbed by mining activities. This is part of an existing 1932 acre agricultural preserve.
- Pursuant to California Government Code Section 51282, the County proposes to make findings that the cancellation is in the public interest for reasons including local economic and employment factors and the development of unique mineral resources. It can also be noted that conversion of land use from rangeland to the mining of significant gold and silver resources is not, in this situation, likely to result in the removal of adjacent lands from agriculture use, or result in discontinuous patterns of urban development since the cause for conversion (i.e. the mineral resource) is unique to the site.
- In addition, substantial cancellation fees would have to be paid pursuant to Government Code Section 51283.
- 8-4-5 Section 4.2.9 states that mining is an accepted compatible use of forest land in the Hayden Hill area. A mining prescription is not required since the mine is not on USFS land.
- 8-4-6 A "boom and bust" study for the Project is included in Section 4.2.8.13, which discusses this information. Lassen and Modoc Counties are aware of the Proposed Action, and are free to negotiate for impacts directly attributable to the Proposed Action.
- 8-4-7 If an unknown cultural resource is encountered during construction or operations, work will be halted on that spot and the Section 106 process initiated. This is a standard operating procedure for all cultural resource projects.

8-4-8

The Hayden Hill Project site was evaluated for visual impacts and measures were introduced to mitigate these impacts. We have determined that the "Project will eventually meet the VQOs for the area if reclamation efforts are successful in establishing landforms, vegetation types and vegetation patterns that are harmonious with the surrounding natural landscape." Please refer to Sections 3.11 and 4.2.11 for information on the visual analysis completed for the Project.

The phrase, "existing vegetatively recovering conditions", is unclear. We understand this phrase to be a reference to natural-recovering revegetation. A site specific Reclamation Plan has been developed (see Appendix E). The seed mix has been revised to promote greater species diversity and include more native plants. The seed mix is subject to further revision based upon the results of the on-site field trials. All excavated areas will be covered with top soil before planting. Fertilizers and amendments will be added to soil as needed. Weeds will be discouraged. With these efforts, the reclaimed site will differ greatly from natural-recovering revegetation.

In regard to the rounded top waste rock dump, see response to comment 8-1-3 above.

In regard to the Jeffrey Pine bio-diversity plan, see response to comment 8-2-6 above.

8-4-9

The electrical transmission line to the site will be combined with the existing overhead lines owned by SVEC, from Adin to the junction of Route A-2 and Highway 139. The old overhead phone line on Highway 139 between A-2 and the Hayden Hill Road junctions will be removed. Please see Section 4.2.11.4 for additional mitigation measures for the power line corridor.

- 8-5-2 Please refer to Section 4.2.11.3. Visual Impacts Roads South and West. Colors and materials harmonious with the natural surroundings will be used on buildings and other structures.
- 8-5-3 Please see revised Section 4.2.12.
- 8-5-4 There is a potential for competition between recreational users and Project construction workers for camp sites at the Willow Creek Campground. This is considered a short-term impact which would no longer exist after Project construction is completed. Long-term usage of local campgrounds by project-related workers could be discouraged through the strict enforcement of USFS 14-day stay limits.
- 8-5-5 The Lassen County Planning Department will maintain an up-to-date mitigation compliance data base. The data base will be open to the public. See Appendix D.
- 8-5-6 Comment acknowledged.
- 8-5-7 See Appendix D. MCC personnel will have an office on site and will be paid by the applicant similar to other LGMI professional employees. Furthermore, the mine will pay to the County, funds for permit administration for the County to apply to its compliance verification needs. The mine will also contribute, with other mining operations, to the County SMARA implementation program.
- 8-5-8 This wording has been eliminated from the revised Reclamation Plan. See Appendix E.

- overhead utility lines wherever possible, removing older utility lines as mitigation for visual impact, and/or moving the power line away from the highway so it is in the visual background instead of the foreground, sections 3.11.3 and 3.11.4
- 8-5-2 Buildings, section 2.2.7.5, improvements and solution tanks should be painted in earth tones.
- 8-5-3 Transportation 4.2.12
The prison and Sierra Army Depot expansions should be included in the cumulative traffic impact evaluation.
- 8-5-4 Recreation 4.2.13
As a mitigation measure, Modoc N.F. should strictly enforce the campground limit during the mine construction phase.
- 8-5-5 Mitigation and Compliance Program Appendix D
Public information and involvement. The Sierra Club is a grassroots organization. In order to meaningfully participate in the ongoing mining and reclamation process, our access to information is vital; this is our primary concern. When details of monitoring, compliance, or mitigation are withheld, unavailable or difficult to obtain the suspicion, probably justified, is created that something is wrong. When this information is available, even if there are problems they can be resolved in the best manner possible. Therefore, in addition to general statements that all information is public, except proprietary, there should be a specific statement in section 3.2.1 that results of the Environmental Compliance Monitoring Program will be available to the public at a reasonable copying cost, as well as being available to the County, DFG, WQCB, BLM and USFS. Similar statements should appear in section 3.2.2, 3.2.3, 3.2.4, 3.2.5 and in section 3.3. Members of the public should be allowed to verify information anytime during normal business hours. Provision should be added that the lead agency will establish an interested parties list, and at their request these individuals and/or organizations will be mailed copies of all Out of Compliance Notifications, as well as, at a minimum, abstracts of Interim, Quarterly and Annual Reports.
- 8-5-6 If in fact, as seems to be the case, all parties want the best possible mine operation and reclamation, and intend to abide by the terms of the Reclamation Plan, lots of sunshine and public participation should be encouraged and welcomed.
- 8-5-7 Staffing. A full time secretary, and adequate office space, should be required in the MCP for the MCC, section 3.5.1. Also, in sections 3.5.2 and 3.5.3 the MCP should specifically provide that the services of EM's and RS's as determined to be necessary by the County, USFS or BLM will be paid for by the Project Owner/Operator.
- 8-5-8 Draft Reclamation Plan Appendix E 7.0
Goals: We believe that the words "reasonably permit" in section 7.1 and in the Introduction, section 1.3.1, are weak and may be misinterpreted. Stronger language, such as

"to the maximum extent required by law" should be substituted.

Topsoil/Growth Media/Revegetation 7.2 : Section 7.2.4.2.3.2 4.2.4.2 should provide that all areas to be reclaimed should be covered with at least 12 inches of topsoil or equivalent material. If enough topsoil is not available, soil amendments should be added to the best material available to approximate the composition of topsoil. As stated in our soil comments the soil types should be kept separate and not mixed. Soil B horizons, especially for the pine and shrub soils should be saved and stored separately. At least 25 at a minimum one half acre areas and more if possible should be created to enhance the regeneration of pines, junipers and shrubs. These areas would provide future seed sources for recolonization of these soils. Where possible existing shrubs and trees should be salvaged and kept in containers through out the project and used for revegetation. Planting larger trees and shrubs with developed root systems will enhance survival chances. Native local grass and forb seeds should be collected and introduced in the appropriate revegetation seed mixes. The appropriate mycorrhizal species for trees, shrubs and perennial grasses should be added to soils to enhance survival.

Open Pit 7.3.2: We are opposed to the use of fencing for safety purposes, for example around the unclaimed open pits, section 7.3.2, 2.2.8.5 and 2.2.11.2. Reclamation is permanent and fencing needs continual maintenance. Therefore, unless a perpetual trust fund is created to maintain it, fencing is unworkable. The only permanent method to make pit walls safe is to reduce the slope of the walls until the pits present no danger to the public, livestock or wildlife. This should be a part of the Reclamation Plan.

Waste Dump 7.3.3: Our proposed Alternative should be used.

Reclamation Bonding 7.5: The County, USFS and BLM should conduct a public tour of the site, after reclamation is determined by the agencies to be complete, and hold a public hearing before the bond is released. This will ensure that reclamation has been done to the satisfaction of the public and that the bond will not be released prematurely.

Sincerely,
Carl Weidert

Carl Weidert

- 8-6-1 We feel the proposed mitigation and the revised Reclamation Plan adequately mitigate the negative impacts of the Project related to revegetation.
- 8-6-2 Section 4.6.7 of the revised Reclamation Plan (Appendix E) discusses the fate of site fencing and the conditions required prior to any removal. Please refer to this section for details.
- 8-6-3 See response to comment 8-1-3.
- 8-6-4 No provision is made by State, Federal or local law for public review before release of a bond. All monitoring data will be available for public review through the County.



SIERRA CLUB

California/Nevada RCC Mining Committee
P.O. Drawer W, Independence, CA 93526
Stan Hays, Chair. (619) 878-2244

RECEIVED

JULY 28 1991

LASSEN COUNTY
PLANNING DEPT.

May 23, 1991

Re: Draft Environmental Impact Report/Environmental Impact Statement
Hayden Hill Project
Lassen County, California

Dear Sir:

The Sierra Club Mining Committee believes that this EIR/S represents the minimum documentation necessary to address the impacts of a large open pit cyanide heap leach mine. The EIR/S itself, the Mitigation Compliance Program and Reclamation Plan appear to be in compliance with applicable County ordinances and State and Federal laws and regulations, and appropriate for this area which is not close to historic or developed areas, or near Wilderness or Park areas or areas of critical environmental concern.

Comments Regarding Mitigation and Compliance Program, Appendix D:

9-1-2 Public Information and Involvement. As a grassroots organization, the Sierra Club is vitally concerned with access to and availability of information. In order to meaningfully participate in the ongoing mining and reclamation process, accurate and complete information is the key. When details of monitoring, compliance, or mitigation are withheld, is unavailable or difficult to get the suspicion, probably justified, is created that something is wrong. When this information is available, even if there are problems they can be resolved in the best manner possible. Therefore, in addition to general statements that all information is public, except for proprietary, there should be a specific statement in section 3.2.1 that results of the Environmental Compliance Monitoring Program will be available to the public at a reasonable copying cost, as well as being available to the County, BLM, and USFS. Similar statements should appear in section 3.2.2, 3.2.3, 3.2.4, 3.2.5, and in section 3.3 members of the public should be allowed to inspect the ongoing monitoring data and reclamation anytime during normal business hours. Provision should be added that the lead agency will establish an interested parties list, and at their request these individuals and/or organizations will be mailed copies of all Out of Compliance Notifications, as well as abstracts of Interim, Quarterly, and Annual Reports.

If in fact, as seems to be the case, all parties want the best possible mine operation and reclamation, and intend to abide by the terms of the Reclamation Plan, lots of sunshine and public participation should be encouraged and welcomed.

9-1-4 Staffing. A full time secretary, and adequate office space, should be required in the MCP for the MCC, section 3.5.1. Also, in sections 3.5.2 and 3.5.3 the MCP should specifically provide that the services of EM's and RS's, as determined to be necessary by the County, USFS, or BLM will be paid for by the Project Owner/Operator.

9-1-2 All monitoring data will be available for public review through the County.

9-1-4 See Appendix D. MCC personnel will have an office on site and will be paid by the applicant similar to other LGMI professional employees. Furthermore, the mine will pay to the County, funds for permit administration for the County to apply to its compliance verification needs. The mine will also contribute, with other mining operations, to the County SMARA implementation program.

9-2-1 This wording has been eliminated from the revised Reclamation Plan. See Appendix E.

9-2-2 We do not feel this would be advantageous at this site. Sufficient plant material in seed or seedling stock is available. LGMI will not use an herbicide on the topsoil stockpiles which has a residual effect greater than the time the soil will be left in the stockpiles. This will be under the direction of the County Agricultural Commissioner.

All disturbed areas, excluding the steep slopes of the pit and waste rock dump, will be covered with 12" of topsoil, as available. It is anticipated enough topsoil will be available.

The necessary water for irrigation would cause undue environmental impact and the resulting vegetation could be dependant on this additional water and not self sustaining.

9-2-3 The road design has been completed to minimize side cast material. See Sections 2.2.7.1 in the Final EIR/EIS, and 3.2 in the revised Reclamation Plan (Appendix E).

9-2-4 Sufficient mitigation and livestock management is provided. Section 4.2.5.4 has been revised to reflect the Habitat Mitigation Plan located in Appendix I. Grazing management practices are discussed in Section 4.2.5.4 under sage grouse and pronghorn.

The impacts to the cover values of the Low Sagebrush and Jeffrey Pine/Mountain Shrub communities are short-term and limited in extent. The habitat impacts are mitigated through the Habitat Mitigation and Management Plan included in Appendix I. Please refer to Sections 4.2.4, 4.2.5, and Appendix E and I.

9-2-5 Section 4.6.7 of the revised Reclamation Plan (Appendix E) discusses the fate of site fencing and the conditions required prior to any removal. Refer to this section for details.

SIERRA CLUB MINING COMMENTS ON HAYDEN HILL DEIR/S P.2
Comments Regarding Draft Reclamation Plan, Appendix E:

9-2-1 Goals: We believe that the words "reasonably permit" in section 7.1 and in the Introduction, section 1.3.1, are weak and may be misinterpreted. Stronger language, such as "to the maximum extent required by law" should be substituted.

9-2-2 Topsoil/Growth Media/Revegetation: Section 7.2 and Environmental Consequences sections 4.2.3.2 and 4.2.4.2, should provide that all areas to be reclaimed should be covered with at least 12" of topsoil or equivalent. If enough topsoil is not available, soil amendments should be added to the best material available to approximate the composition of topsoil. As many plants as possible should be salvaged and moved into a nursery, so that revegetation can start with some larger plants. If necessary, irrigation should be provided until vegetation is well established. Weed control should be as much as possible by hand, not using herbicides.

9-2-3 When Hayden Hill Road is realigned, Environmental Consequences section 4.2.4.2, there should be no sidecast of material.

9-2-4 Cumulative impacts of loss of USFS and BLM timber and sage habitat, Environmental Impacts section 4.2.3.5 and 4.2.4.3, should be mitigated by the Project Owner/Operator purchasing equivalent amounts of private land with similar resources and donating the land to the USFS or BLM. Mitigation for vegetation loss and stream damage could also be made by the Project Owner/Operator buying the existing grazing leases and donating them to the USFS and BLM, this enhancing the environment by preventing further damage from cattle, Environmental Consequences section 4.2.5.3 and 4.2.6.2.

9-2-5 Fencing: We are opposed to the use of fencing for the purpose of safety, for example around the unreclaimed open pits, section 7.3.2 and Alternatives section 2.2.8.5 and 2.2.11.2. Reclamation is permanent, and fencing needs continual maintenance. Therefore, unless a perpetual trust fund is created to maintain it, fencing is impractical. The only permanent method to make pit walls safe is to reduce the slope of the walls until the pits represent no danger to the public, livestock, or wildlife, and this should be a required part of the Reclamation Plan.

9-2-6 Waste Dump: We believe that the best visual results would be obtained by smoothing and revegetating the top of the waste dump, down as far as it is visible from Highway 139, section 7.3.3, Alternatives section 2.3.1.3, Environmental Consequences 4.2.11.2, 4.2.11.3, 4.3.3 and Figure 4.11.2, Viewpoint No. 1. Below the point the waste dump is visible

Three waste rock dump designs were studied in detail for environmental impacts in the Draft EIR/EIS: the Proposed Action, the Smoothed Waste Rock Dump Alternative, and the Complete Benching Alternative (Section 4.3.3). Benching the waste rock dump from the top to the 5,750-foot elevation is planned for the Proposed Action. The Complete Benching Alternative would require benching all the way to the toe of the dump. The Smoothed Waste Rock Dump Alternative would require the smoothing of the benches after completion of mining.

It was determined that an unbenchd dump would be more susceptible to erosion than a benchd dump. Increased erosion would increase impacts to water quality and make reclamation more difficult. As a result, the Complete Benching Alternative has been identified as the preferred alternative by the BLM and USFS.

To smooth the benches of the entire waste rock dump, as in the Smoothed Waste Rock Dump Alternative, the Project life would have to be extended an additional one to two years. An increase in Project life would result in an increase in water and fuel consumption, air emissions, and socioeconomic impacts. This alternative would have completely mitigated the visual impact from Highway 139 of the waste rock dump, but only with complete reclamation success. As discussed above, successful reclamation would be more difficult on an unbenchd dump.

Only the top of the waste rock dump will be viewed from Highway 139 (Figure 4.11-2). However, the actual area of the waste rock dump that would have to be smoothed to achieve the goals of a partial smoothing alternative represents 30 to 50 percent of the total area of the dump (Figures 2.2-8 and 4.11-2). The Project life would have to increase, resulting in the associated negative impacts. In addition, the unbenchd portion of the dump would be more susceptible to erosion. A partial smoothing alternative would result in many of the same negative impacts as the Smoothed Waste Rock Dump Alternative and the unbenchd portion of the Proposed Action waste rock dump.

Successful reclamation of the benchd waste rock dump will result in landforms and vegetation types and patterns that are harmonious with the surrounding landscape, when the Reclamation Plan and visual mitigation measures are followed. The visual analysis completed for the Hayden Hill Project determined that the visual impact of the top of the waste rock dump from Highway 139 will not be significant.

Because the visual impact of the benchd dump will not be significant and because of the negative impacts generated by smoothing the upper portion of the waste rock dump, a partial smoothing alternative of this nature will not be considered in detail.

from the highway, benching and partial revegetation would be acceptable. By reclaiming the top of the dump, the area that is most visible, and benching the bottom, probably most travelers on the highway would not notice anything amiss, and the environmental consequences otherwise would be about the same as the preferred alternative.

Also, referring to Figure 4.11.3, visual objectives would be better met if the waste rock dump, at least the top on the horizon, were smoothed off on the right, similar to the appearance of the hill on the left.

Bonding: The County, USFS and BLM should conduct a public tour of the site, after reclamation is determined by the agencies to be complete, and hold a public hearing, before the bond is released. This will ensure that reclamation has been done to the satisfaction of the public, and that the bond will not be released prematurely.

9-3-4 Comments Regarding Introduction, Chapter 1:

The statement in section 1.3.2 that Lassen County does not have jurisdiction over mining on Federal or State lands should be corrected. Under SMARA and other State law, and the MOU's between the USFS and BLM, Lassen County does have jurisdiction.

9-3-5 We also do not believe that the plan prevents all "unnecessary or undue degradation", section 1.7. The alternate grading of the waste dump, as suggested above, would help achieve this objective, as well as the replacement of public land damaged by the mine.

9-3-6 Comments Regarding Alternatives, Chapter 2:

9-3-6 As stated above, we believe that reclaiming the top of the waste dump and benching the lower part will best meet visual objectives, rather than the alternatives in section 2.1.

9-3-7 Provision should be made for control of acid mine waste if the conclusions in section 2.2.2.3 prove to be incorrect.

9-3-8 To best protect resources, we believe that a drip system only should be used on the heap leach piles, section 2.2.3.2 and 2.3.1.7. The issue of spray drift in high winds, which could cause wildlife mortality, is not adequately addressed in Environmental Consequences 4.2.7.5. It should be noted that under the Migratory Bird Treaty Act ~~zero~~ mortality of migratory birds is the only legally acceptable standard. Drip irrigation would also minimize water use, and thus pumping costs. We also believe that cyanide ponds, even if properly netted, represent a threat to birds, and that a

9-3-3 No provision is made by State, Federal or local law for public review before release of a bond. All monitoring data will be available for public review through the County.

9-3-4 Section 1.3.2 has been corrected as noted.

9-3-5 Comment acknowledged. Please see the remainder of the final EIR/EIS.

9-3-6 See response to comment 9-2-6.

9-3-7 The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County in December of 1990, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included. (Appendix M)

9-3-8 Heap leach operations require the flexibility to use both drip and spray emitters for solution control, and the Applicant proposes to use both to obtain the benefits of each. The requirement of the use of evaporation minimization methods at all times eliminates the ability to adjust solution volumes, apply solution in a manner suitable to the season, and affects solution application and distribution efficiency. Cited examples are located in different climatic zones where sub-freezing conditions are not seasonally persistent.

The Applicant recognizes the potential benefits of using a system composed entirely of drip emitters, which are described in more detail in Section 2.2.3.2, Leach Solution Application System. However, the use of drip emitters in a heap leach solution application is a new technology and, as with any new technology, it has yet to be proven that an operations can rely solely on their use as a means of continuous production. A number of mining operations, including AMAX's Sleeper and Wind Mountain mines have used drip emitters with varying degrees of success. This allows the mines to continue to experiment with the drip emitters without significantly affecting normal operation. In the case of Hayden Hill, a closed system use of sprays in conjunction with drip emitters is necessary for solution balance.

SIERRA CLUB MINING COMMENTS ON HAYDEN HILL PROJECT P. 4

completely enclosed system, section 2.3.1.7, and Environmental Consequences section 4.3.7 is the only system acceptable by today's standards. We note that drip irrigation and enclosed processing systems are now in use, or are proposed for use, in several Western mines, including Bond Gold at Beatty, Nevada and Viceroy Gold in the East Mojave National Scenic Area, California.

Utilities. Buildings:

To prevent residential sprawl, and the additional cost to provide services to a very low density residential area, we recommend that the Project Owner/Operator build and operate the power line, and that it be removed when the mine closes, rather than having the line built by SVEC, section 2.2.7.3, Description of the Environmental section 3.8.13 and 3.11.1.2, and Environmental Consequences section 4.2.8.12 and 4.3.5. If this is not done, then the visual impact of the powerline should be reduced by combining it with existing parallel overhead power or telephone lines wherever possible, removing older utility lines as a mitigation for the visual impact, and/or moving the power line away from the highway so it is in the visual background, instead of foreground, Description of the Environment section 3.11.3.3 and 3.11.3.4.

Water is vital in this very dry country. We do not believe that deep aquifers are necessarily completely isolated from shallow "perched" aquifers, as postulated in section 2.2.7.4, Description of the Environment 3.6.3.1 and 3.6.3.2, and Environmental Consequences 4.2.6.3 and 4.2.6.4. These shallow aquifers probably have holes in the bottom due to faulting, thin or missing clay layers, etc. and leak. There should be provision for providing water to the shallow springs if they dry up, permanently if necessary, possibly with wells and windmills.

Buildings and improvements should be painted earth tones, section 2.2.7.5.

We favor Facilities Location Alternative 3, section 2.3.1.4, for the reasons given in Environmental Consequences section 4.3.4.

Note on Possible Alternative uses:

Although post mining uses other than pre mining uses are not usually considered, and perhaps not even acceptable under current law, we believe that at this site, and given that reclamation will not be complete, some consideration should be given to alternate post mine use of the site in section 2.3. At the end of mining, the site will have utilities

According to field data, there are six springs located within the Project boundary which demonstrate observable flow. Three of the unnamed springs located in Letterbox Canyon, display flow volumes not large enough for measurement. The other three springs are located along Hayden Hill Road. Daisy Dean Spring has an estimated average flow of 1 to 2 gpm. An unnamed springs in the same drainage has an estimated seepage rate of 1 gpm. Indian Springs has an estimated average flow of 3 to 5 gpm. These flow observations were made by KP in August of 1990. The flows from these springs subside to negligible volumes during the dryer summer months and in some cases dry up completely.

The flows from major springs in the Project area, such as Daisy Dean and Indian Springs, are not anticipated to be affected by Project operations. The springs are located in areas hydrogeologically separated from the minor seeps and springs around Hayden Hill.

The Applicant has committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project, to return these re-routed waters to the subsurface.

The mitigation plan for the Project (see final EIR/EIS) has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4.

The anticipated impacts to springs and seeps in the Project Area are considered relatively insignificant, in light of observed seasonal flows, and lack of significant impacts to established wetlands.

Please refer to Section 4.2.11.3, Visual Impacts Roads South and West. Colors and materials harmonious with the natural surroundings, will be used on buildings and other structures.

The sage grouse passive relocation plan will be carried out for two more seasons before the heap leach pad covers the pond lek. Passive relocation attempts will be made during those years. The Mitigation Plan states that if the sage grouse relocation plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I. The creation of an 18 acre wetland in Section 2 will mitigate the loss of the stock pond.

There is no current proposals to use the site for these purposes. Undue speculation is discouraged by both NEPA regulations and CEQA guidelines.

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The anticipated impacts to springs and seeps in the Project Area are considered relatively insignificant, in light of observed seasonal flows, and lack of significant impacts to established wetlands.

9-4-4

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9-4-5

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9-4-6

There is no current proposals to use the site for these purposes. Undue speculation is discouraged by both NEPA and CEQA.

SIERRA CLUB MINING COMMENTS ON HAYDEN HILL DEIR/S P. 5

(water, power, and septic), good road access, and possibly some useable buildings (office, lab, changing rooms, etc). This infrastructure could be used to build, for instance, and RV park, perhaps with a lake for fishing, water skiing, swimming, etc. A dude ranch, or an environmental studies center, or prison or conservation camp could also be considered for the site. These or similar uses could provide some jobs and local tax revenue after the mine closes, and with proper planning the infrastructure could be easily adapted to one of these uses.

Thank you for your consideration. Please keep us on your mailing list.

Stan Hays
Stan Hays

LAW OFFICES

LEROY W. RICE

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SAN FRANCISCO, CALIFORNIA 94102

RECEIVED

MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

(415) 673-7800

May 24, 1991

Lassen County Planning Department
707 Nevada Street, Rm. 236
Susanville, CA 96130

Attn: Mr. Merle Anderson

RE: Comments on the Draft
EIR/EIS
Hayden Hill Project
Lassen County, Calif.

Gentlemen:

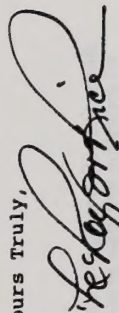
I have serious concerns regarding the impacts of the proposed Hayden Hill Project on the environment and the surrounding communities of Lassen and Modoc Counties. As such, I feel it is imperative that the environmental document adequately address these impacts and propose appropriate mitigations for adoption by the lead agencies. For the most part, the Draft EIR/EIS provides a fairly thorough discussion of the environmental setting in the project area, but falls far short in many cases of identifying environmental impacts and providing adequate mitigations. As submitted, this document does not meet current standards of environmental disclosure under both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Attached are specific comments on the EIR/EIS. I would appreciate your close consideration of these comments.

Significant amounts of additional data are required to provide adequate environmental documentation for the project. In light of this, I am requesting that the document be revised accordingly and that the draft EIR/EIS be re-distributed to allow for adequate public comment on the revised document prior to issuing the Final EIR/EIS.

Thank you for your consideration of my comments. If you have any questions, please contact me at (415) 673-7800.

Yours Truly,



LeRoy W. Rice

LWR:kh
encls.

COMMENTS ON THE
DRAFT
ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL IMPACT STATEMENT
for the
HAYDEN HILL PROJECT
Lassen County, California

Section 3.2.4

How can the area be considered to have low seismic potential as stated in the first sentence of this paragraph? The following paragraphs state that the site is within Seismic Zone 3 and has the potential for a 5.5 Richter magnitude earthquake or greater. It also states that 10 earthquakes of magnitude 5 to 6 have been recorded in the region and that Holocene (Recent) surface faulting has occurred around the project site. As stated in this document, the gold was deposited as a result of hydrothermal activity along faults. The entire area is tectonically active. Active faulting of the Basin and Range, Sierra frontal fault, and the Brothers Fault Zone surround the project site. All of this does not add up to low seismicity. This section should be substantially revised to reflect the fact that it is in an area of high seismic activity rather than down-playing this potential with a leading statement about low seismicity. Mitigations should be included in the EIR/EIS as appropriate to ensure that seismic activity will not impact project facilities, which may in turn impact the environment.

Section 4.2.2.2

Simply stating that the impacts to topography would not be adverse is insufficient. Substantial topographic alteration will occur. This could impact water runoff, recharge characteristic, and drainage patterns. Why are these impacts not considered to be adverse? If these impacts are not significant, provide examples of what type of topographic alteration would be considered significant. Develop significance criteria and explain the impacts for each project facility that would affect topography. Then relate these impacts to the significance criteria. A clear relationship should be established between the significance criteria and the impacts to topography for each of the facilities.

This section provides no discussion of potential impacts from seismic activity. Section 3.2.4 states that Holocene (Recent) faulting has occurred around the project site and that the area has the potential to be subject to earthquakes of Richter magnitude 5.5 or greater. Recent, significant tectonic activity has occurred in the region including seismicity in the Basin and Range to the east, the Sierra Frontal Fault zone to the south, and the Brothers Fault Zone to the north and west. Even if no surface evidence was found for recent faulting within the project area, surface rupture could occur. In recent years, a significant earthquake occurred in the Los Angeles area where no previous indication of surface rupture had existed. Surface rupture beneath impoundments containing hazardous materials, such as cyanide and other process fluids, could have substantial impacts on water quality and other natural resources. What measures will be taken to ensure that seismic activity can not impact these facilities?

10-1-1 "Low seismic potential" is a reference to the probability of an earthquake happening at the Project site in a 10-year period corresponding approximately to mine life. Historically, few earthquakes have occurred near the site. The most significant earthquakes in the region have been associated with the Honey Lake Fault to the southeast. The closest earthquake event of significance was an estimated magnitude 6.0 event which occurred in 1875 just south of Susanville and at a distance of 50 miles. Along the same fault system, a similar magnitude 6.0 event occurred in 1966 at a distance of 106 miles from the site.

Holocene (Recent) is a classification of geologic time which includes the last 5,000 years. Mineralization at Hayden Hill is associated with late Miocene subaerial hot spring activity that occurred during faulting and contemporaneous explosive volcanism. The Miocene Epoch transpired from 7 to 26 million years ago.

However, the site is located within the Seismic Zone 3 which corresponds to the probability of major damage during an earthquake event. Section 3.2.4 has been revised to clarify these items. In addition, Section 4.2.2 has been revised to include an analysis of geologic hazards, including seismic events. Impacts and mitigation measures are discussed in this section.

10-1-2 Comment noted. Section 4.2.2.1 has been revised to address the commentor's concern. Please note that impacts to surface water are addressed in the water resources Section 4.2.6.

10-1-3 Section 4.2.2 has been revised to include an analysis of geologic hazards, including seismic events. Impacts and mitigation measures are discussed in this section.

- 10-2-1 Please refer to Section 4.2.2 which has been revised to provide a more thorough analysis of the impacts to geology and topography. In a regional context, the direct long-term modifications to topography would not be adverse. However, the modification of Hayden Hill by the pit will introduce an unnatural landform to the region, resulting in a significant unavoidable adverse impact. Potential seismic impacts are discussed in Section 4.2.2 as well.
- 10-2-2 The Soil Erosion Control Plan is included in the Final Reclamation Plan (Appendix E). The Final Reclamation Plan has been reviewed and approved by the BLM, USFS, and County in conjunction with the CRWQCB, the ARB, and the California Division of Mines and Geology.
- 10-2-3 Additional storm water hydrology and sedimentation studies have been completed to evaluate and formulate effective measures to reduce sedimentation arising from storm water erosion. Please refer to Section 4.2.6.2 and Section 4.2.6.5. The Soil Erosion Control Plan is included in the Final Reclamation Plan (Appendix E). The Final Reclamation Plan has been reviewed and approved by the BLM, USFS, and County in conjunction with the CRWQCB, the ARB, and the California Division of Mines and Geology.
- 10-2-4 The soil survey indicates sufficient growth media is available for 12" over all disturbed areas proposed to receive soil. It is anticipated, with the collection and use of the B horizon soils, sufficient topsoil will be available. See Sections 3.3 and 4.2.3 for more information on this subject.
- 10-2-5 See response 10-2-4.
- 10-2-6 See response 10-2-4.

Section 4.2.2.3

Why are impacts to geology and topography not considered significant? What is the criteria for determining this? What are the potential seismic impacts?

Section 4.2.3.3

Because the soil erosion plan has not yet been developed, the EIR/EIS should include extensive details on the requirements of this plan so that it can be evaluated by the readers of the EIR/EIS. General requirements are not sufficient to allow the reader to evaluate the impacts that may occur after implementation of the erosion control plan.

Section 4.2.3.4, last bullet

Sufficient information has not been provided to conclude that water erosion and sedimentation will not be significant if a sediment and erosion control plan is implemented. Provide specific details of the plan that will prevent significant impact. Provide the significance criteria that allowed for the determination that the impacts would not be significant.

Section 4.2.4.2

Assumptions

First bullet: It is stated that benches and flat areas will be covered with 12 inches of growth media as available. What will be done if 12 inches is not available?

Impacts

This section states that 12 inches of topsoil will be placed in all disturbed areas if possible; if not possible, 8 inches will be used. What will the impact be if only 8 inches of topsoil is available as compared to 12 inches? What if less than 8 inches of topsoil is available? What will be the impacts on short and long term productivity of the soils and resulting affects on vegetation and wildlife?

Low Sagebrush

This section states that re-topsoiling and seeding of these areas is expected to result in near complete re-vegetation and therefore, disturbances are expected to be short term. The previous section indicates uncertainty in the amount of topsoil that will be available (see previous comment). If less than optimum soil cover is available, how will that impact this plant community and associated wildlife?

Section 4.2.4.3

Mitigation Measures for Vegetation

Fourth bullet: How can it be determined that Corps of Engineers (Corps) permit requirements, that have not yet been established, will be sufficient mitigation for wetlands? Section 404 of the Clean Water Act is only one consideration in protection of wetlands. The California Department of Fish and Game (DFG) is a Responsible Agency under CEQA for protection of fish and wildlife. Their comment authority is not restricted to 1603 Agreements. It is very common that

10-3-1	CDFG and LGMI have developed a Wildlife Habitat Mitigation and Management Plan Applicant to the and a Wetlands Mitigation Plan located in Appendix I. The plan states that approximately 18.5 acres of self-sustaining wetlands will be created, this will replace both the habitat and cover values. The impacts and mitigation Section 4.2.5 for wetlands and riparian habitats have been revised to reflect the contents of the Wildlife and Wetlands Mitigation Plans (Appendix I).
10-3-2	Seeps fall under the jurisdiction of CRWOCB. The commentor's concerns are addressed in Sections 4.2.4.2 and 4.2.4.4. The area will be reclaimed and the cover value of the existing vegetation will be returned. The habitat value will return within ten years. There is sufficient habitat of this type adjacent to the disturbance. If there was no similar habitat available, regionally, this impact would have been considered significant.
10-3-3	The impacts to the cover value of the wetlands will recover with reclamation and will be short-term. Also, there is a substantial amount of similar cover available at Snyder Waterhole, Silva Flat, Daisy Dean Spring and various other wet areas in the vicinity. The bulk of the waters affected are manmade impoundments and of low value to wildlife and water quality. See Appendix I. The habitat value is mitigated by the creation of an 18 acre wetland in Section 2.
10-3-4	The Final SPCC is included as Appendix L in this document.
10-3-5	Impacts to wildlife due to noise is not considered significant due to the technical information available as well as information available from other similar operations and agencies that monitor them, such as the Nevada Department of Wildlife. Section 4.2.5.2 has been revised to include more information on the impacts of noise on wildlife. The sections on Noise, 3.14 and 4.2.14, have also been updated with more information.
10-3-6	The Wildlife Habitat Mitigation and Management Plan specifies what the applicant will do to mitigate wildlife impacts on a species by species or habitat basis. The wildlife mitigation in Sections 4.2.5.4 to 4.2.5.5 has been revised to reflect the contents of this plan. The mitigation plan is located in Appendix I. (See response 10-4-1.)

12-74

10-3-1 DFG has different views on protection of wetlands and associated habitat than the Corps. Furthermore, the Corps only addresses dredging or filling of wetlands, not other impacts to wetlands. For example, Section 4.2.4.2 of the EIR/EIS under Wetlands addresses the potential for excavation of the pit to impact the geohydrology of seeps in the area. This would not be addressed by the Corps because it does not directly involve dredging or filling of wetlands. A full evaluation of wetlands should be conducted for the EIR/EIS, and not left to be addressed by permit conditions of the Corps or other agencies.

Section 4.2.4.4

First paragraph

10-3-2 This paragraph states that loss of 105 acres of commercial timber will result in loss of habitat value and biological diversity, and that reclamation of this acreage will not be possible. It is further stated that this is a long-term, adverse, unavoidable impact. It then states that because the acreage is small compared to that available, the impact is considered insignificant. What is the significance criteria used for this determination? It is possible to have local impacts to vegetation and wildlife, even though the community may be abundant regionally. Identify and discuss the difference between local and regional significance of biological impacts.

Third Paragraph

10-3-3 Why is the loss of 6.55 acres of cover not significant? Explain significance criteria used to determine this.

Section 4.2.5.2

Hazardous Materials

10-3-4 Spills of hazardous materials present a significant threat to water quality, wildlife, and other natural resources. Release of these materials to surface water or groundwater could be catastrophic. Provide details of the SPCC Plan so that readers of the EIR/EIS can accurately evaluate the potential for impacts as a result of spills. This should include measures to be taken to quickly remedy contaminated surface water or groundwater.

Noise

10-3-5 Blasting noise from the project could significantly impact wildlife in the area. Resident species and species that use the area for migration could be adversely affected by these operations. This section dismisses impacts to wildlife from project noise by citing one study that was said to be inconclusive. Inconclusive studies are not evidence that impacts do not exist. Rather this study suggests that more work is necessary. Studies should be conducted to evaluate project noise impacts on wildlife prior to certification of the EIR/EIS. These studies should include evaluation of project noise impacts on migrating species to determine if these species would avoid the area, thereby resulting in stress on the species or on surrounding areas.

Impacts

10-3-6 Under the discussion of Pronghorn Antelope, it is stated that because antelope are at peak historical levels, loss of 360 acres of habitat would not be significant. If the

- 10-4-1 We believe there is adequate information on the herd available through CDFG and the baseline studies done by Bio-Resources. The Habitat Mitigation Plan, located in Appendix I, states that the goal for pronghorn is to maintain the population at current levels. This will be achieved by managing a created wetlands to maximize forb production, as well as managing grazing on 355 acres of adjacent habitat. Seasonal aerial and ground counts will be conducted for monitoring.
- 10-4-2 We feel this is a minor potential and is not considered a significant impact. This area (NE California) has a low occurrence of eagle poaching. Band recovery shows about 50% of eagle mortalities are caused by electrocution. Of the mortalities, one was shot (BLM 1991).
- 10-4-3 Though unlikely, spills of cyanide, fuels and processing reagents could potentially impact ground or surface water quality. However, design features such as bermed and lined containment areas will minimize the risk of surface water contamination due to spills. This impact is not considered of probable significance. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality in accordance with the SPCC and ERP (Appendix L).
- 10-4-4 The main impact to the golden eagles and prairie falcon is the loss of 400 acres of foraging base. golden eagle foraging ranges are generally quite large, several square miles. The created wetlands will increase forb production for the area and therefore will increase the small mammal (rabbits and rodents) which will replace some of that food supply. Post-mining the pit walls can be modified to provide potential nesting habitat for raptors. See the Habitat Mitigation Plan in Appendix I.
- 10-4-6 A revised sage grouse relocation plan is included in Appendix G. The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond lek. Counts will be done in July and August of 1991 to check on breeding success. A winter count will be conducted in February 1992 to check on wintering resident or migratory population.
- The Habitat Mitigation Plan states that if the sage grouse plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. The Mitigation Plan is included in Appendix I.
- The criterion for extirpation is that less than 3 displaying males are observed at the new lek or other leks that may arise in the vicinity, for three consecutive years.

10-4-1 antelope are at peak levels, loss of this habitat could cause relocation of antelope in this area, stressing surrounding habitat. A study should be conducted to evaluate the antelope populations in the area and the potential impact of the loss of this habitat.

10-4-2 Under the discussion of Golden Eagles, the potential for poaching due to increased access should be discussed and mitigation should be provided in Section 4.2.5.4.

Section 4.2.5.3, Run-off from Highway 139 and Other Roads/Impacts to Wildlife Summary

10-4-3 There is no mention of potential impacts from non-point source pollution. Accumulation of oil, grease, solvents, and other hazardous materials can occur on roads, pads, and similar areas. Runoff from these areas, particularly following periods of low stream flow, could adversely impact fisheries and wildlife. This potential should be addressed in the EIR/EIS and mitigation should be provided.

Section 4.2.5.4

Proposed Mitigation

10-4-4 This section states that mitigation for the prairie falcon and golden eagle is not proposed because these species are not declining. It is not appropriate to allow impacts to species of concern only because they are not currently declining. The purpose of listing species is to promote recovery of the species. The fact that its numbers are not declining does not indicate species recovery, but rather that the species status is remaining the same. Mitigation should be provided to protect these species.

This section also suggests that pit walls would replace loss of cliff and outcrop habitat once the mine is complete. These species can not wait around 8 years for their habitat to be replaced. This could result in impact to this species that are not necessarily short-term. Additionally, pit walls that are accessible to predators from above would not be a suitable replacement habitat for the loss of well protected cliffs or rock outcrops. Therefore, these impacts to the species would be long term, and significant. Adequate mitigation for this species should be provided in the EIR/EIS.

Sage Grouse

10-4-6 This section states that attempts will be made to passively relocate the sage grouse to offset impacts from the project. If the attempts are not successful, no mitigation will be provided. The EIR/EIS should address this possibility and provide adequate mitigation to protect the sage grouse in the event that the relocation efforts are unsuccessful. This section later states that a recovery team will implement additional mitigation as necessary to "save" the sage grouse population. What is meant by save, and how will it be determined that the population has been saved? Who will pay for acquisition of private land and management of the species? The mitigations should make it clear that the project applicant is directly responsible for these costs. Specifics of the additional mitigations should be provided in the EIR/EIS so that the reader can evaluate the feasibility of protecting the sage grouse.

10-5-1 The Applicant is responsible for all mitigation measures and associated costs. The Applicant would also be fully responsible for any mitigation and costs on agency land (should it become necessary to use agency land). Cost estimates of mitigation measures are provided in the Habitat Mitigation Plan, in Appendix I.

10-5-2 The wildlife mitigation Section 4.2.5.4, has been revised to reflect the contents of the Mitigation Plan. The Plan, located in Appendix I, states that the goal for mule deer is to maintain the population at current levels. This will be achieved by manipulating 1500 acres of shrub habitat in the Gerig burn area. The goal is to maintain overall existing mule deer migration patterns through the area, during and after the life of the mine. If severe problems develop in deer movement, mitigative measures will be determined between CDFG and LGMI. Monitoring will take place through annual aerial and ground counts.

10-5-3 Grazing improvements are discussed in the Habitat Mitigation Plan (HMP) under sage grouse and pronghorn. The wildlife mitigation Section 4.2.5, have been revised to reflect the mitigation plan. The Applicant is responsible for all mitigation measures and costs. The Applicant would also be fully responsible for any mitigation and associated costs.

10-5-4 The HMP, located in Appendix I, states that the goal for pronghorn is to maintain the population at current levels. This will be achieved by managing a created wetlands to maximize forage production, as well as managing grazing on 355 acres of adjacent habitat. Seasonal aerial and ground counts will be conducted for monitoring. In addition to the created wetland, 35-40 acres of lush forb rich meadow in Anderson Ranch will be protected from grazing. The Wetlands Mitigation Plan is also located in Appendix I.

10-5-5 We feel the segregation of soils at this site is not warranted. See Section 3.3, in Appendix B, of the revised Reclamation Plan (Appendix E) for specifics on soils handling.

10-5-6 The goal is to protect 230 acres of Jeffrey Pine habitat in the Preston Canyon/Anderson Ranch area. These areas will not be commercially harvested until the reclamation bond is released. Certain practices to improve habitat diversity will be implemented. Section 4.2.5.4 has been revised to give details of mitigation. Details are also discussed in the Habitat Mitigation Plan in Appendix I.

10-5-7 Wetlands are regulated by the Clean Water Act (CWA) of 1972. The CWA is administered by the Corps of Engineers and Environmental Protection (EPA) in a joint effort defined by a memorandum of understanding between the two agencies. The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4 and Appendix I.

10-5-8 Appendix I includes a wetlands mitigation plan, which includes protection measures. Grazing management in the created wetlands area is also discussed in Section 4.2.5.4.

10-5-9 35 acres of wet meadow will be protected from grazing and enhanced in Anderson Ranch. This is described in Section 4.2.5.4 and Appendix I.

10-5-1 This section also states as a mitigation that BLM will improve management of adjacent Low Sagebrush habitat to maximize forb protection. If this is a mitigation due to project impacts, BLM should not be financing these efforts. The EIR/EIS should provide a mechanism for the cost of this mitigation to be provided by the applicant.

Mule Deer

10-5-2 Page 4-36 of the Draft EIR/EIS states that the California Department of Fish and Game is concerned about the potential disruption of mule deer migration through the project area; however, mitigation simply states that the applicant will carry out procedures for enhancement of the Mountain Scrub plant community and will manage grazing on the Anderson Ranch. What is the value of these mitigations with respect to mule deer? Provide specifics of these mitigations so that the reader of the EIR/EIS can evaluate the effectiveness of these measures.

Pronghorn Antelope

10-5-3 Mitigations say that grazing management on BLM allotments will be improved. How will this be improved; by whom; and who will pay for it?

10-5-4 This section also states that permanent grassland sites will be developed. Where will these be developed; how much land; and how will this help the pronghorn antelope? Provide specifics so that the reader of the EIR/EIS can evaluate the impacts.

Jefferson Pine/Mountain Scrub Habitat

10-5-5 Provide details of how the sorting and stockpiling of soils shall be conducted. This is a critical issue in the effectiveness of revegetation efforts. If not performed correctly, this could have serious adverse impacts on the future productivity of the soils, and result in unsuccessful revegetation.

10-5-6 Explain what the third mitigation under this section means. Is it committing the applicant to do anything? What does "protect the maximum amount of available forest habitat until site is again considered forested" mean?

Wetlands/Riparian Habitat

10-5-7 The first mitigation states that enhancement of wetland habitat will be per appended Corps stipulations. Where are these mitigations appended? Is this provided in the EIR/EIS? If not, this is not adequate mitigation for the purposes of CEQA and NEPA.

10-5-8 The second mitigation simply states that management methods to protect riparian areas from livestock will be developed. This is not adequate. Specific measures must be provided so that the reader can evaluate the impacts and the applicant is required take specific action to protect these wetlands. Provide detailed requirements for this mitigation.

10-5-9 The third mitigation does not provide specifics for mitigating the impacts to riparian habitat. Specific sites for the mitigation and methods of developing and protecting these sites must be provided in the EIR/EIS to ensure that these impacts are adequately mitigated.

Table 4.5-2 which conceptually addresses mitigations for biological resources is also inadequate to ensure protection of these resources. Throughout this section mitigations must be revised to provide detail of how the resources will be protected, not merely generalized statements that do not tie the applicant to specific action.

Section 4.2.5.5

Construction Activities

The third mitigation measure states that sediment trapping facilities will be provided downstream from construction. What will these facilities be and how well will they protect fisheries from sedimentation? Requirements must be more specific!

The fourth mitigation measure states that avoidance will be used to minimize disturbance of wetland vegetation. Exactly how much acreage of wetlands will be impacted and where? How will this be mitigated? What about construction setbacks from wetlands?

The last mitigation measure in this section says that wetlands and/or detention basin will be designed and constructed at appropriate intervals. What are appropriate intervals and how is this determined? This information must be provided in the EIR/EIS so that the reader can evaluate it and so that the applicant is tied to specific requirements.

Waste Rock Dump

First mitigation measure: What is considered appropriate ground cover vegetation?

Third mitigation measure: What will be the size of the detention ponds and how is this determined? What will be done if the ponds fill up?

Highway and Road Run-off

This section addresses hazardous material transport only. This section should also address on-site uses and potential spills of hazardous materials, and non-point source pollution from roads, pad, etc.

Section 4.2.5.6

Wildlife

The third mitigation states that intensive monitoring and adjustment of sage grouse mitigation could be the key to a successful relocation of leks and continued survival of this population. If this is the case, details of the relocation, monitoring, and provisions for adjustment of mitigations should be provided in the EIR/EIS so that the reader can evaluate these measures and so that the applicant is tied to specific requirements to protect the species.

Section 4.2.6.3

Throughout Section 4.2.6.3, it is suggested that certain measures would reduce impact, but the document does not specifically state that they are required. These

10-6-1

This table has been updated to include the proposed mitigation measures. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4- 4.2.5.5, and tables have been revised to reflect the contents of this plan. The Mitigation Plan is located in Appendix I.

10-6-2

During culvert construction activities, CRWQCB and CDFG will be checking to see that BMP's are being utilized to control sediment, in accordance with WQCB and stream crossing permits. Culvert construction will take place during low-flow. Sediment trap location and design are described in the Water Resources Sections 3.6 and 4.2.6, and the Reclamation Plan (Appendix E). The Erosion and Sediment Control Plan is located in Sections 4.4.3 and 4.4.4 of the Reclamation Plan. See also response 10-7-6.

10-6-3

As stated in Section 4.2.4.3, approximately 6.55 acres of wetlands, 80 lineal feet of permanent stream and 1,315 feet of intermittent wetland would be impacted by the Proposed Action. Mitigation includes: The creation of an 18 acre self-sustaining wetland; access road cuts will be on the hill to avoid the stream, and 35 acres of wet meadow along an intermittent stream in the Anderson Ranch will be enhanced and protected from grazing. Mitigation measures are discussed in Section 4.2.4.3. The EPA 404 wetlands permit specifies mitigation and permit restrictions. The wetlands mitigation plan is included in Appendix I.

10-6-4

The Corps of Engineers 404 wetlands permit specifies mitigation and permit restrictions. The wetlands mitigation plan is included in Appendix I.

10-6-5

Seed mixes are included in the Reclamation Plan (Appendix E).

Section 4.2.5.3 states the size of the detention ponds was determined by the 1,000-year, 24-hour storm event. (Reports Knight Piesold 1990 and DKP 1990c). The Project Operations and Maintenance Manual describes inspection and maintenance procedures.

10-6-7

Potential impacts are discussed in wildlife Section 4.2.5.3. On site uses of hazardous materials are discussed in Section 2.2.8.10 and Table 2.2-4. A SPCC Plan and Emergency Response Plan have been developed and reviewed by USFWS, CDFG, and USFS. The SPCC and ERP are located in Appendix L. NPDES requirements are discussed in Water Resources, Section 4.2.6.

10-6-8

The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond lek. Counts will be done in July and August of 1991 to check on breeding success. A winter count will be conducted in February 1992 to check on wintering resident or migratory population.

The Mitigation Plan states that if the sage grouse plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

10-6-9

The verbs "should" and "shall" utilized in Section 4.2.6.3 express the obligation and duty of the operator, as well as the expectation of an occurrence of given probability. Required mitigation measures will be specified in the Record of Decision and Conditional Use Permit, Conditions of Approval.

- 10-7-2 CRWQCB staff have been working closely with LGMI operators of the Hayden Hill Project, since its inception. During numerous meetings and conversations, CRWQCB staff and LGMI have discussed the Regional Board's requirements for construction and operation of the proposed mine and ore processing facilities. The emphasis has been directed toward design of containment structures for materials which may have an adverse impact on water quality. The CRWQCB has also worked with LGMI in developing background water quality data for both surface and groundwaters which will be necessary to monitor and evaluate any impacts the Project may have on water quality. Due to the inclusion of the Regional Board staff at the early stages of the proposed mine, staff recommendations have resulted in the development of conditions and mitigation measures which, if followed, will effectively reduce adverse effects upon water quality.
- Regional Board staff has also reviewed construction specifications for the containment of the cyanide solutions including the heap leach pads, solution ponds, associated pipelines and conveyance structures, tanks, and the tailings impoundment. CRWQCB staff will inspect the facilities both during construction and throughout operation of the Project to help assure the continued integrity of the containment structures throughout the life of the Project. At the close of operations, Regional Board staff will remain actively involved in reclamation and post-Project monitoring to prevent any long-term threat to waters of the State.
- 10-7-3 Groundwater depletion is not a probable or realistic impact of the proposed Project. The hydrogeologic performance of the deep aquifer basin was evaluated utilizing extremely conservative recharge and storage parameters. Expected drawdown is slight in a regional sense. Also, by using a well field extraction system, drawdown is spread out over the basin, thereby minimizing significant drawdown in one spot. Natural water table fluctuations can be as much as 20 to 30 feet.
- 10-7-4 Comment acknowledged. This has been changed from "should" to "shall".
- 10-7-5 Accumulation of surface water and groundwater in the pit is not anticipated, however, the following mitigation measures may be necessary in the unlikely event of surface water ponding.
- Any water accumulated in the pit would be used in dust suppression activities or used for mill make-up water.
- Should chemical sampling of pit water indicate a significant degradation of water quality, a pit dewatering system would then be designed and installed.
- Accumulated pit water may require treatment to established regulatory standards prior to discharge in to natural drainages.
- A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit. These mitigation measures were presented in the draft EIR/EIS and are included in the final.

measures should be changed to make it clear that specific action is required, not just suggested.

- 10-7-2 The mitigations presented on pages 4-60 and 4-61 should be part of the recommended mitigations in the EIR/EIS, not left merely to the discretion of the RWQCB. Additionally, these mitigations do not provide for detection or mitigation of leaks in pipelines carrying process solutions, cyanide, etc. Specific monitoring and leak detection requirements should be added to the EIR/EIS to mitigate this potential impact.

Mitigation Measures to be Incorporated Into Project Design

Water Use Requirements

- 10-7-3 Second mitigation measure: What will be done if the predictions of no noticeable affect to groundwater are not valid? This mitigation provides no mechanism to protect the water supply.

- 10-7-4 Third mitigation measure: Change "should" to "shall."

- 10-7-5 Fifth mitigation measure: Change the mitigation so that it is clear that treatment of pit water will be required if it exceeds certain limits, and specify these limits.

Waste Rock

- 10-7-6 Last mitigation measure: Change this mitigation so that it is clear that construction of permanent sedimentation detention facilities downgradient of the waste rock dump is required. Also provide details of required long-term maintenance of these facilities, including post-project maintenance.

Section 4.2.6.4

- 10-7-7 The first paragraph states that, loss of available water from the deeper regional aquifer until recharge occurs after project completion, is not considered a significant impact. The second paragraph states that drying up local wetland due to project operation in the pit area is not significant. It is not sufficient to simply state that impacts are not significant. Provide significance criteria for this section of the EIR/EIS and specifically justify why these impacts have been determined to be insignificant.

Section 4.2.8.4

Locally Hired Induced Workers

- 10-7-8 Explain why it was assumed that 50 percent of the induced jobs would be filled by local labor.

Population Distribution

- 10-7-9 The last paragraph of this section mentions the potential for proliferation of isolated rural residents due to the project. The EIR/EIS should also mention that once the project ends, these residents may become vacant and could deteriorate, leaving unmitigated environmental and economic impacts.

10-7-6

During Project operations, all sedimentation control structures installed in on-site drainages will be checked for blockage bi-monthly. Any debris or sediment that inhibits the proper function of the surface drainages will be removed immediately by the Applicant.

Reclamation activities shall include interim and final control of slopes on cuts and fills, plus revegetation to control surface erosion, sheet flow, and sediment loading. After operations cease, the functional ability of all sediment control structures will be monitored and maintained on a semi-annual basis, or as appropriate to satisfy regulatory criteria. Monitoring and maintenance operations are anticipated to continue until water quality can be shown to meet NPDES permit requirements with no additional treatment. At this time the NPDES permit will be terminated. The CRWQCB will ultimately stipulate when and if sediment ponds are reclaimed. Please also refer to Sections 4.2.6.2, 4.2.6.3, and 4.2.6.5.

10-7-7

Impacts to the regional aquifer system are discussed on Section 4.2.6.2. Drawdown estimates for the region are presented in the text. According to field data, there are six springs located within the Project boundary which demonstrate observable flow. Three of the unnamed springs located in Letterbox Canyon, display flow volumes were not large enough for measurement. The other three springs are located along Hayden Hill Road. Daisy Dean Spring has an estimated average flow of 1 to 2 gpm. An unnamed springs in the same drainage has an estimated seepage rate of 1 gpm. Indian Springs has an estimated average flow of 3 to 5 gpm. These flow observations were made by KP in August of 1990. The flows from these springs subside to negligible volumes during the dryer summer months and in some cases dry up completely. Drilling data indicate that Bunselmeier Spring is part of a shallow groundwater system which is hydraulically separated from the regional aquifer. Pit operations have the potential for impacting minor seeps in close proximity to the pit. The springs and seeps located to the north, south and southeast of the pit are part of the local perched groundwater system. Secondary porosity features, such as faults and fractures, controlling the seeps may be intercepted as the pit is excavated, thereby diminishing the flow of shallow groundwater to the springs and seeps. The local perched aquifer recharge area will also be affected by pit excavation and may affect seeps farther away from the pit, such as Bunselmeier Spring. Water flow quantities from these fracture systems are expected to be low in the vicinity of the pit based on the low flows observed during exploratory drilling. No wetlands, springs, and seeps occur within the open pit site. However, because the elevation of the bottom of the final pit will be about 5,400-feet above the mean sea level, about 900-feet below the present summit of Hayden Hill, excavation of the pit may alter the geohydrology beyond the limits of the pit itself. Seeps located approximately 1,200-feet southwest of the pit at about 5,720-feet elevation, and seeps located 6,700-feet southeast of the pit at approximately 5,760-feet elevation may be affected by the excavation. The flows from major springs in the Project area, such as Daisy Dean and Indian Springs, are not anticipated to be affected by pit operations. The springs are located in areas hydrogeologically separated from the minor seeps and springs around Hayden Hill. The Applicant has committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project, to return these re-routed waters to the subsurface. Wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be not net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4.

10-7-8

In order to analyze potential effects of the Project, assumptions have been made concerning certain aspects of the Project. These include: the number (or share) of Project operations workers who will be drawn from the existing work force; the size of the households associated with operations workers; the amount of induced employment that will be generated by the Project; the distribution of Project workers and their families to nearby communities; and the amount of ad valorem and sales taxes that will be paid by the Project. These assumptions were developed using a combination of experience from other areas, the opinions of knowledgeable local officials, standard socioeconomic methods and professional judgement. While this is not a "worst-case" analysis, in most cases these assumptions are conservative; that is, they are developed to test the effects of greater rather than lesser impacts.

10-7-9

Please note that "the EIR need not engage in a speculative analysis of environmental consequences for future and unspecified development" resulting from project closure (CEQA, Section 15146, degree of specificity). It is unreasonable to assume that new residences will be abandoned, and that vacant residences constitute an unmitigated environmental and economic impact. A recently completed "boom and bust" study for the project is included in Section 4.2.8.13.

- 10-8-1 Please refer to the reference: Harding Lawson Associates, Susanville, CA. 1987. Honey Lake Draft Environmental Impact Report July 14.
- 10-8-2 Lassen and Modoc Counties are aware of the proposed Project, and are free to comment and negotiate for impacts directly attributable to the Project.
- 10-8-3 See response to 10-8-2 above. Impacts must be quantified and attributable to the Project. The EIR/EIS impacts are potential, but not proven. Neither county has proposed specifications for "settlement."
- 10-8-5 Please refer to revised Section 4.2.8 in final EIR. A recently completed "boom and bust" study for the Project is included in Section 4.2.8.13.
- 10-8-7 Please refer to Sections 4.2.8.10 and 4.2.8.11.
- 10-8-8 Please refer to Section 4.2.11.2. "The visual impact of any facility, structure, or disturbance is a function of whether or not it can be seen and how much of a contrast it presents compared to the surrounding area." It is stated in Section 4.2.11.2 that the reclaimed pit "would not appear as a natural-looking landform and would remain apparent in the landscape, a long-term adverse impact." This statement appears previous to the statement of the current appearance of the site. The point is that few people will see the site from the south, and that existing views are to previously disturbed areas.
- 10-8-9 We believe that the visual impacts from the roads south and west of the mine site are of lesser significance than those from Highway 139. Highway 139 is classified a scenic highway corridor, and is an interstate travel route used by tourists and recreationists. The roads south and west of the mine site are used minimally and almost exclusively for administrative use by the USFS and BLM, by deer and antelope hunters during the big game season, and by property owners in the area. In addition, as stated above, existing views are to previously disturbed areas.

Figure 4.11-3 presents the mine site after one growing season. The viewpoint is proximate to the mine site, presenting the maximum visual impact. After complete revegetation, the site will appear more natural-looking, and will blend better with the surrounding landscape. This appearance will increase with distance from the site. Again, few people will actually view this area.

Section 4.2.8.6

- 10-8-1 First paragraph: Explain the basis for the ratios used from the HLA, 1987 report.

Section 4.2.8.10

- 10-8-2 The section states that no mitigation is recommended for fiscal impacts to Modoc County, or for potential increased housing in rural areas and associated increased costs. Explain why no mitigation is proposed and why these are not unavoidable adverse impacts.

- 10-8-3 The last mitigation requires only that discussions for negotiating compensation occur. This mitigation should be changed to require that the applicant reach a negotiated settlement with both Lassen and Modoc Counties prior to project construction.

The discussion of socioeconomic impacts and mitigations is by far the weakest potential for impact to the local communities. Potential impacts are addressed, and then, in the mitigation section, these impacts are ignored or mitigations are inadequate.

- 10-8-5 The document completely fails to discuss the impact of a large, short-term project such as this on the small communities in the area. Large numbers of workers and their families will be introduced to these communities, requiring housing, schools, and other services for a relatively short time. They will then become unemployed residents of these communities when the mining operations and the associated tax base are long gone. The number of introduced residents will also include those necessary to provide support services. Available housing in most of these communities is already low, and capacity will be far exceeded through project construction and operation. Mitigation measures for these impacts have been all but ignored in the EIR/EIS.

The potential impacts on the local communities and the economy should be re-evaluated and mitigation should be provided to adequately address all of these impacts.

Section 4.2.8.12

- 10-8-7 Significant cumulative impacts have been identified in this section, but no mitigation has been provided. Mitigation measures should be added to adequately mitigate these impacts, or the impacts should be included as unavoidable and adverse.

Section 4.2.11.2

- 10-8-8 This section attempts to justify visual impacts of the project by comparing it to existing conditions; however, Figure 4.11-3 suggests that significant impacts on visual resources will persist long after project completion.

- 10-8-9 The document also dismisses the visual impacts to the south by stating that these are of less concern than from Highway 139. Although this view will be seen by fewer people, those owning land or otherwise using the area to the south will realize a significant visual impact (see Figure 4.11-3).

- 10-9-2 Traffic counts and projections are made for state highways, but not County roads. Based on Caltrans projections, it is not anticipated that the capacity of state highways will be exceeded as a result of the Project.
- 10-9-3 The mitigation measures presented in Section 4.2.12.3 are conditional to the extent that transportation impacts are realized as a result of the proposed action. Significant transportation impacts will warrant implementation of proposed mitigation measures.
- 10-9-4 Impacts to wildlife due to noise are not considered significant due to the technical information available as well as information available from other similar operations and agencies that monitor them, such as the Nevada Department of Wildlife. There is no conclusive information regarding the effects of noise, such as blasting, on wildlife. Several field studies have concluded noise disturbance minimally affects wildlife. A synthesis of these studies noted the uncertainties of the effect of sonic booms on wildlife, and concluded there were no known quantifiable effects. Noise from blasting is not expected to have a significant adverse effect on wildlife, as no quantifiable effects upon wildlife can be ascribed to blasting or other similar noise exposure. Impacts on wildlife due to noise are not considered significant. Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). The Sections on noise, 3.14 and 4.2.14, have also been updated with more information.
- 10-9-5 After mining operations are complete, land disturbed in the planning area will be reclaimed and returned to their original uses, including timber, grazing, and recreation and wildlife. The overall purpose of encouraging development of mineral resources at Hayden Hill is to improve and diversify Lassen County's industrial base and to protect and manage use of the County's timber, grazing, and wildlife resources. The planning area is designated a Significant Mineral Resource Area because development of mineral resources at Hayden Hill is a priority of the County. Other resources will be considered and impacts will be minimized as appropriate.
- 10-9-6 Existing and proposed monitoring wells have been strategically located with respect to the facilities' locations and hydrogeologic regime of the Project area. Please refer to Figure 2.2-6. If waste constituents found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the state requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDR's) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the Regional Board at public hearings. The general public may review these documents and provide comments prior to their adoption.
- Section 4.2.6 should also satisfactorily address commentor's concerns.

Visual impacts should be re-evaluated and mitigations should be provided that adequately address visual impact to all receptors.

Section 4.2.12.2

In this section, general statements are made that increased traffic should not be a problem because traffic levels from the project are light and that the existing road should be able to handle it. These statements are unsupported. No traffic counts were done to determine the impact of the project on the Level of Service (LOS) of these roads. Project traffic could impact road safety, particularly during dangerous winter conditions and during peak tourist seasons. A traffic study should be conducted for the project which includes traffic counts, pre- and post-project traffic levels, and impacts of the project on the LOS of any impacted roadways.

Section 4.2.12.3

The mitigation measures for traffic impacts do not include any requirement. The mitigations simply say LGMI could... The mitigations should be changed based on results of the traffic study (see previous comment) and include specific requirements.

Section 4.2.14.2, Wildlife

As previously stated, blasting noise from the project could significantly impact wildlife in the area. Resident species and those that use the area for migration could be adversely affected by these operations. This section dismisses impacts to wildlife from project noise by citing one study that was said to be inconclusive. Inconclusive studies are not evidence that impacts do not exist. Rather this study suggests that more work is necessary. Studies should be conducted to evaluate project noise impacts on wildlife prior to certification of the EIR/EIS. These studies should include evaluation of project noise impacts on migrating species to determine if these species would avoid the area, thereby resulting in stress on the species or on surrounding areas.

Page 5-5

Last sentence: Why should mining be given preference over other uses, including wildlife habitat? The proposed project would have significant adverse impacts on existing uses and the environment. The County planning documents should not be changed to suit the needs of specific individuals at the expense of existing uses.

General Comments

There are numerous sources of surface water and groundwater contamination from the project. In light of the stated excellent water quality in the area, even a small release of hazardous material could adversely impact this vital resource. It does not appear that the proposed monitoring wells would be sufficient to detect any and all potential contamination. The system of monitoring well should be revised to allow detection of any and all potential spills. Additionally, the EIR/EIS should specifically spell out what steps will be taken in the event that contamination of either surface water or groundwater is detected.

10-10-1 Figure 3.4-3 of the Draft and Final EIR/EIS shows the wetland areas delineated at the site. Section 3.4.2.5 of the Draft and Final EIR/EIS discusses and describes the wetlands. Impacts to wetlands are stated in 4.24. The wetlands delineation report is on file with Lassen County.

10-10-1 Nowhere does the document adequately identify, either in text or figures, the areas of, and extent of impacts to wetlands. The EIR/EIS should provide clear documentation of these impacts so that the reader can adequately evaluate this.

May 15, 1991

To: Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, California 96130
Attention: Merle Anderson

From: Jerry H. Parks
P.O. Box 210
Adin, California 96006

I am Jerry Parks and I am representing our family owned livestock operation that is located near and around the Hayden Hill Mine site in Lassen County. I am submitting an update to earlier comments that are on record.

11-1-2 Since my last comments of January 12, 1990, we have visited and met with the people representing the Mining Company. Our concerns about our grazing allotment around Hayden Hill have been discussed and well accepted by the Mining people. It appears additional land purchased by the Mining Company will be available to compensate for grazing land taken up by the mine. The scope of the BLM and private grazing land taken up for the mine does not have as much impact on our grazing allotment as the disruption to the newly implemented 2 pasture grazing system started in the early 1980's. We have accepted the introduction of the mine and have decided to manage around it.

I have glanced through the EIS for the Hayden Hill Project. This is a bad time of year for me to study such a document and comment effectively.

11-1-4 Besides living near Hayden Hill, we travel to Hayden Hill at least one day a week year around, and during the grazing months more frequently. The EIS mentioned the grazing allotments effected by the mine. There was not much said if any about the Silva Flat allotment which lies directly south and west of the mine site. This BLM allotment consists of over 20 sections of ground that are grazed by cattle belonging to Five Dot Cattle Co. and Parks Ranch. The Hayden Hill Road off Hiway 139 is the main access route to and from this allotment.

11-1-5 It is mentioned in the EIS about the concern of the decline of the Sage Grouse due to stresses from drought, juniper encroachment, grazing and isolation from other populations. I will say that no matter what mitigation measures are introduced that the Sage Grouse will continue to decline because of predators. Some 30 to 40 years ago there was a band of sheep that summered on and around Hayden Hill. I am talking about 1000 to 1500 sheep. There were no allotment division fences, Forest land and BLM were open and there were horses and cattle also. During this time Sage Grouse were abundant. The boundary fences were put in, the sheep stopped coming to Hayden Hill and livestock numbers were reduced. At the same time more water was developed. During this change the Sage Grouse population expanded around Silva Flat and Hayden Hill. All of this time the area there was extensively used by Federal hunters for predator control with the compound 1080 poisoned bait stations. These

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MAY 20 1991

LASSEN COUNTY
PLANNING DEPT.

11-1-2 Comment acknowledged.

11-1-4 The Silva Flat grazing allotment was not identified by the BLM or USFS as being affected by mining land acquisition or operations.

11-1-5 CDFG and the Applicant, LGMI, have developed a Wildlife Habitat Mitigation and Management Plan. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4 - 4.2.5.5, and tables have been revised to reflect the contents of this plan. It is anticipated that with the revised mitigation and the management of habitat in Section 2 that the grouse population can be stabilized. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

Page 2

May 15, 1991

To: Lassen County Planning Department

From: Jerry H. Parks

stations were marked by a post with top painted red. When this control program was stopped the decline of the Sage Grouse started and has proceeded to the present state.

11-2-2 The EIS states that the BLM WILL manage grazing on meadow and low sage brush to enhance forage needed by Sage Grouse. There currently is an Allotment Management Plan on Silva Flat Allotment and a successful two pasture rotation system on the Willow Creek Allotment. The permittees and the agencies work in close harmony. The livestock numbers have been reduced over the years. What more can be asked. It is quite clear that predator control is out. So to enhance Sage Grouse population for the future, I would have to suggest burning and juniper removal as being the most important procedure.

11-2-3 The single most important part of the Hayden Hill Project to me and my family is the installation of the power line. We can only support the power supply alternative that LGMI install, own, maintain, and remove after project completion the power line to Hayden Hill. The area south from the Lassen County Road A2-Hiway 139 intersection to Hayden Hill has stayed remote over the years with the exception of some summer cabins along Willow Creek to the north along Hiway 139. Hiway 139 travels through some prime deer wintering areas as it goes south to the Hayden Hill road. Included in this area is land owned by my family known as the Avila Place. I feel if the power line were owned by Surprise Valley Electric Company it would be left in place and would ruin forever the remote and pristine climate of that area.

The Parks family land is all currently in the Agriculture Preserve, the Williamson Act. A power line left open to all users would encourage residential development and force our livestock operation out of business.

I noticed in EIS that in 1967, Hiway 139 was designated a scenic hiway and the area north of the Hayden Hill road was designated as recreational. I am amazed at this determination as at the same time the County allowed a long time Ranch adjacent the Avila Place to be subdivided into 40 acre parcels and down. It is not clear to me just where the 211 parcels zoned U-C-2 that lie within a one mile radius of the proposed power line corridor are located. It seems to me that most of these parcels are 40 acres and less even if they are located in the U-C-2 zoned area. It appears to me this land was subdivided before the land was zoned. It is my opinion that this upland conservation land would become a residential development if the power line were left intact after termination of the mining project. A seasonal summer cabin atmosphere without the power line would be more acceptable to the environment than permanent year-around residential development.

I feel a certain amount of pressure to respond to the EIS document as I feel the Hayden Hill Mining venture will have a considerable impact on the continuation of our family owned business. I have been left with wishful assumptions to questions that I have asked which tend to bother me.

11-2-2

The applicant is responsible for grazing management on lands they control. USFS grazing permits are not affected by the Project and the BLM will suspend the AUMs that will be inside the Project area until Project Completion. Grazing is discussed under range in Sections 3.9 and 4.2.9. Grazing management techniques are discussed under sage grouse and pronghorn in Section 4.2.5.4.

11-2-3

Long-term growth inducing impacts of the proposed transmission line adjacent to ranching lands may occur as a result of the Proposed Action. Under the Proposed Action, Surprise Valley Electrification Corporation (SVEC) would own and construct the transmission line. As a participant in the Rural Electrification Association, SVEC assists both public and private land owners in accessing the electrical power grid.

Currently, properties along Highway 139, a distance of 11 miles south of the Parks Ranch Road to the Hayden Hill Road are not connected to the electrical power supply grid. SVEC projects such as the one included in the Proposed Action would provide new opportunities for land development to the surrounding rural areas. The significance of this impact varies with the viewpoint and is discussed in Section 4.2.8.9. Please also see Sections 2.2.7.3 and 3.8.13.

In Section 2.1, this alternative is identified as a preferred alternative, therefore, it is likely this alternative will become a condition of Project approval. Please also note that the EIR need not engage in a speculative analysis of environmental consequences for future, unspecified development.

11-3-1 Comment acknowledged.

Page 3

May 15, 1991

To: Lassen County Planning Department

From: Jerry H. Parks

1-3-1 I noticed in the EIS Chapters 7.0 and 10.0 the people and organizations contacted. I feel it would have been in order to have had someone from my family listed as a reference or person contacted. We are the only people living year around near enough to the mine to realize the noise and disruption during the construction and operation stages. We will also be the most affected with excepting the changes afterward.

Jerry H. Parks

cc: Larry Hansen, LGM
Joe Wagner, Alturas Resource Area, BLM
Dennis Pope, Big Valley Ranger District, USFS
Frank Hall, Ca Dept Fish and Game

RECEIVED

January 12, 1990

MAY 20 1991

To: Lassen County Planning Department

LASSEN COUNTY
PLANNING DEPT.

From: Jerry H. Parks, P. O. Box 210, Adin, Ca. 96006

My name is Jerry Parks and I am representing my family by making some comments about the Hayden Hill Gold Venture and the impact that it will have on our family owned ranching operation.

In the year 1980, a fencing project along Hwy 139 from the present Hayden Hill turn-off to the cattle guard north of Said Valley was completed by the U. S. Forest Service. The highway being fenced divided the Willow Creek grazing allotment with both east and west side being of equal size. This is where part of our cattle are for summer grazing--from May 15 thru Sept. 30. Both parts of the grazing allotment are fenced pastures with one grazing permittee--Haskell and Jerry Parks. The majority of the land is USFS land with some private timber land on the east and west sides and some BLM land just on the west side. The grazing allotment and numbers are administered by the Forest Service. With the fencing of 139 in 1980 it was agreed that the permittee would enter a two pasture rotation program which has been in practice since. The cattle graze one pasture for 2 or 2 1/2 months then are moved across the highway to the other pasture for the remainder of the season. The next year the pattern is reversed.

The BLM land in the west pasture or what we consider as the Hayden Hill side of the allotment is on and around Hayden Hill itself. The BLM land on and around Hayden Hill is considered as the Daisy Dean allotment which we pay an annual lease on 17 head of cattle for 5 months. Since the BLM land on and around Hayden Hill is not fenced, this 17 head permit is figured in with our total F.S. allotment adding up to 190 animal units and the BLM ground on and around Hayden Hill is grazed by our cattle just 2 or 2 1/2 months in the summer. One year early--May 15 thru July 15 or 25 and the next year late--July 15 or 25 thru Sept. 30.

It would be safe to say that with the water developments made in recent years by the F.S. and permittee that when cattle are grazing the west pasture, one would find 40 to 50 head or more on and around Hayden Hill. The Hayden Hill road heading west from 139 and Hayden Hill itself would be considered as the heart of that west pasture.

1-4-5 With the beginning of the gold mining operation and the fencing of the Hayden Hill area along with the fencing of other private land and water at the Daisy Dean, it would greatly damage our grazing system and force reductions in our animal numbers.

It is my understanding that the Hayden Hill road is to be widened which would make for a faster road, possibly causing vehicle-cow accidents.

1-4-7 It is my understanding that when mining operations terminate on Hayden Hill that the land will return to its present multiple use and that our cattle will be allowed to graze it again. I would hope that watering sites would

11-4-5

Fencing around the project area is designed to preclude livestock from mining operations, thereby minimizing potentially hazardous interactions. The reduced AUM's are not anticipated to have a significant impact on the number of animals which can be grazed after the proposed mitigation is applied. See Section 4.2.9.6.

11-4-7

Detention ponds and newly created wetlands will provide water for wildlife and livestock following reclamation.

Page 2

January 12, 1990

To: Lassen County Planning Department

be re-established near the present locations. I would also like to see the power line taken down so the land could retain some of its aesthetic value.

Enclosed is a copy of a letter that was read before the Planning Commission of Lassen County in 1982. Also has pasted and my concerns and feelings are the same.

Henry H. Parker

cc: Larry Hansen, Wildlife Hill Sporting Company
Dee Palmer, etc.
Loren Conkle, 1982

RECEIVED

Date: January 6, 1982

MAY 20 1991

To: Planning Commission of Lassen County

LASSEN COUNTY
PLANNING DEPT.

From: Jerry H. Parks

In being the fourth generation of my family to have lived near Hayden Hill, I would like to take this time to make a few comments about the mining operations there.

Ever since the Hill stopped paying in the early 1960's, there have been miners coming and going, depending on the fluctuation of the price of gold. Several years ago if a miner wanted to do some serious work on a claim it meant work; but today it is just a matter of a few hours with a caterpillar and they are gone, leaving a helluva mess. Sometimes the same party doesn't come back but there will be someone else doing the same thing. Over the years this has not left much of an impression on Hayden Hill, but the last year and a half is a different story. It just looks like kids have been playing with big machinery. Ponds were built and later breached and trenches were cut all over the Hill. All of this was done without realizing a penny's profit for their work and leaving scars that will always be there.

In reference to the use of the chemical cyanide, I can join on record as being opposed to its use. The area of Hayden Hill is open range for the cattle that raise on a Mining Forest Service and BLM lands. These cattle belong to me and my Dad. Some thirty-five years ago cattle and horses belonging to my Dad and neighbors were found dead due to cyanide poisoning near a dump on the west side of the Hill. Deer were also found dead in this area.

In conclusion, I suggest the Planning Commission give considerable thought before approving a mining operation should show sound evidence that it has full intentions and financial backing for developing and maintaining an operation that would turn profit and pay for the land that it destroys. This mining business should also be responsible for restoring this land back to its historical and aesthetic state for the people and the County of Lassen.

Hayden Hill had its boom, it was valuable to the community and the country. If a business like operation can't exist there today without turning a profit, then let Hayden Hill rest.

Jerry H. Parks

11-6-2 LGMI will be held responsible for reclamation costs, as per Section 4.14 of the revised Reclamation Plan (Appendix E).

11-6-3 Present day regulations, monitoring, engineering, and management techniques have minimized the risks of cyanide exposure on and off site. Thirty five years ago handling knowledge, management practices, and technology were far behind the uses of toxic chemicals, which resulted in higher losses of livestock and wildlife. Even in the last five years management and operating practices have improved significantly, reducing mortality rates even further.

FALL RIVER - BIG VALLEY CATTLEMEN'S ASSOCIATION, INC. RECEIVED

Post Office Box 66
McArthur, CA 96056

MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

May 22, 1991

Lassen County Planning Dept.
707 Nevada St., rm 236
Susanville, CA 96130

Gentlemen:

I'm writing at the request of one of our members who stands to be severely impacted by the onset of mining operations at Hayden Hill. The Parks family has no desire to prevent these operations from occurring; recognizing the need for county revenues and jobs in our depressed part of California.

However, while answers to the short-term consequences of mining are clear enough, one aspect remains troublesome: that of the unknown long-term (permanent) consequences that would occur should these operations have the side effect of allowing the subdivision and development of properties adjacent to traditional ranching in that area. One purpose of the EIS process is to prevent or mitigate the loss of natural resources, and to assure that these resources are returned to their original state once the mining has been completed.

The Lassen Planning Dept. has an opportunity to see that this is done by requiring that any power lines constructed to serve the mine be removed once mining operations cease. The issue of subdivisions and development should be studied on their own merits and not be allowed to occur as an after-effect of the mine itself.

Your swift and favorable resolution of this request will be greatly appreciated, not only by the Parks family, but by all ranchers in our area who might one day face an equally awesome challenge to our traditional way of life.

Sincerely,
Steven D. Knoch

Steven D. Knoch, Pres.
Fall River-Big Valley Cattlemen's Assoc.

cc: Jerry Parks
Dale Albaugh
Glen Nader

12-1-2

Long-term growth inducing impacts of the proposed transmission line adjacent to ranching lands may occur as a result of the Proposed Action. Under the Proposed Action, Surprise Valley Electrification Corporation (SVEC) would own and construct the transmission line. As a participant in the Rural Electrification Association, SVEC assists both public and private land owners in accessing the electrical power grid.

Currently, properties along Highway 139, a distance of 11 miles south of the Parks Ranch Road to the Hayden Hill Road are not connected to the electrical power supply grid. SVEC projects such as the one included in the Proposed Action would provide new opportunities for land development to the surrounding rural areas. The significance of this impact varies with the viewpoint and is discussed in Section 4.2.8.9. Please also see Sections 2.2.7.3 and 3.8.13.

Please also note an EIR need not engage in a speculative analysis of environmental consequences for future, unspecified development.

Please see Section 2.1. Since the Power Supply Alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

12-1-2

12-91

12

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MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

Adin, California
May 23, 1991

Ladies/Gentlemen

Enclosed my comments for Environmental Impact Report - Hayden Hill Gold
Mining Venture.

Submitted to Lassen County Planning Department, Susanville, California
under date of December 5, 1989 together with my response, comments and
concerns to the EIR/EIS report for Hayden Hill Project under date of
May 22, 1991.

Sincerely,

J. E. Albaugh

J. E. (Ed) Albaugh
P.O. Box 142
Adin, CA 96006

COMMENTS FOR ENVIRONMENTAL IMPACT REPORT
HAYDEN HILL GOLD MINING VENTURE

There are many concerns that must be addressed in the proposed Open Pit Gold Mining Venture of Hayden Hill Gold Mining Company and Lassen Gold Mining, Inc., some follow:

Local and county infrastructure already strained for economic resources (money) are:

1. Schools
2. Roads
3. Protection of people and property (Sheriff Dept. including jails)
4. County judicial system
5. Others

Are the local sewage disposal systems adequate to handle proposed population influx?

What provisions are made to cushion the economic "bust period" after the boom and bust mining period ends?

Nobody wants dirty air and water. With the national concern over chemicals entering the food chain, air and water, how can human error, accidents or other catastrophes keep poisonous substances from polluting our air and water? This huge operation at 6,302 feet, the top of one of Big Valley's water sheds, with its use of chemicals, synthetics (some biodegradable and others not), mechanical mixing devices of soil and water - can leave dangerous contaminants in the area.

In years past debris left from mining activities were responsible for the death of wild life and domestic animals killed by licking the refuse piles in search of salt.

In case of storms with unprecedented amounts of precipitation, how can pollution be kept from contaminating surface water as well as ground water?

While the nation is pushing to preserve historic sites, this historic site will be destroyed.

We look to county, state and federal agencies for protection of its people, our ecosystem, natural resources, air, land and water.

We hope these governmental agencies involved will fulfill their trusted responsibilities to the public by being cautious and prudent with their studies, recommendations and eventual conclusions to the future effects this venture will have on our Big Valley community and life style.

Without doubt some will class these concerns as being emotional, unrealistic and unwarranted, but are they???

Ed Albaugh
P.O. Box 142
Adin, Ca. 96006

December 5, 1989

13-1

13-1-2 Please refer to Sections 3.8 and 4.2.8.

13-1-3 Please refer to Sections 3.8.7 and 4.2.8.7.

13-1-4 A recently completed "boom and bust" study is included in Section 4.2.8.13.

13-1-5 If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDR's) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the Regional Board at public hearings. The general public may review these documents and provide comments prior to their adoption. Section 4.2.6 should also satisfactorily address the commentor's concerns.

13-1-9

It is impossible to avoid the destruction of the town site for this project. All cultural resources impacted by the project were evaluated for eligibility to the NRHP. Sites eligible to the NRHP were evaluated for appropriate mitigation approved by the ACHP, SHPO, and BLM. It was determined that the full effect of the impact to the town site would be adequately mitigated through a detailed data recovery plan prior to disturbance. The Hayden Hill fire tower will be dismantled and reconstructed at an appropriate site. No other sites disturbed by the project were determined to be eligible to the NRHP. Therefore, although the townsite will be destroyed, the historical information pertaining to this site will be preserved. LGMI will incorporate this data into a booklet on the history of the Hayden Hill area. LGMI will also prepare site interpretive displays comparing the modern mining process with that used at Hayden Hill in the past. For more information on the regulatory process addressing cultural resources review and mitigation, please refer to Sections 3.10 and 4.2.10.

May 221991

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL
IMPACT STATEMENT FOR HAYDEN HILL PROJECT, LASSEN COUNTY

After reviewing the Environmental Impact Report/Environmental Impact Statement for the Hayden Hill Project, Lassen County, California - I have found some concerns addressed to the Hayden Hill Mining Venture now Lassen Gold Mining, Inc. not sufficiently addressed to the financial impact on local Big Valley area and Lassen County infrastructure.

CONCERNS FOLLOW:

Additional costs will be required (MONEY)

- * Education
- * Schools
- * Law enforcement (protection of people and property)
- * County judicial system
- * Road construction (maintenance especially from Hayden Hill to junction State Highway 139)
- * Forest Service roads serving adjacent area of Hayden Hill

Nearly all of the mentioned concerns are at present inadequately funded due to budget constrictions.

The two leach sites drain into Willow Creek, a tributary to Ash Creek which confluence with Pit River near Bieber - estimated to be approximately 30 miles from leach site.

The EIR/EIS did not adequately address how an unprecedented amount of precipitation could keep dangerous amounts of toxic pollutants from entering into these vital stream systems which are part of the headwaters of the Sacramento River.

History of leach pads and settlement ponds have not been overly good attracting birds, carnivores and other wild and domestic life to ground seepage and surface water.

As we live on Willow Creek approximately 12 miles from the proposed Lassen Gold Mining, Inc. operations on Hayden Hill, we will be one of the first to feel the effects of any spill into Willow Creek.

13-2-2 Please refer to Sections 3.8 and 4.2.8.

13-2-4 A Geochemical Sampling and Contingency Plan is located in Appendix M. This program addresses monitoring and sampling of waste rock before placement on the dump. The CRWQCB will monitor the NPDES requirements to ensure that no pollutants are sent downstream. The heap leach pad and tailings are lined facilities with run on and run off controlled as described in Section 2.2.5.

13-2-5 Pregnant ponds have been sized to allow storage of the 1,000 year recurrence interval, 24-hour duration storm event in compliance with Section 2546, Subchapter 15, Title 23, California Water Regulations.

13-2-6 The Nevada Department of Wildlife (NDOW) has been collecting data on wildlife mortality due to mining operations since 1986. A newsletter published in November 1990, by NDOW states, "With 95 permittee [mines] reporting to date through the third quarter of 1990, the per-mine wildlife mortality statewide continues to decline, and is at its lowest point since mortality record keeping began in 1986." The yearly total wildlife deaths remained about the same from 1986 through 1990. Preliminary data from the first and second quarters of 1991 shows nearly a 50% reduction in wildlife mortality. This is attributable to the fact that all mines had to comply with pond permit requirements, which include netting or detoxification, by last year.

The average annual mortality rate per mine in 1990 was 15. This number includes all mortalities cyanide, non-cyanide, passerine birds, snakes, coyotes, etc; as well as migratory birds (King and Lamp, 1991).

13-2-7 A spill into Willow Creek, although unlikely, has been addressed in the SPCC and ERP located in Appendix L.

The near-by residents and users of Willow Creek waters are deeply concerned about toxic and other pollutants including bacterial contaminants entering the stream system. Willow Creek flows near homes and through farmsteads via ditches for domestic and stock water use. In addition to domestic and irrigation uses, wild life, water fowl, domestic animals, fur bearing and aquatic life frequent Willow Creek waters.

ADDITIONS TO EIR/EIS:

Surface water should be monitored at least once each month, or more often in case of larger amounts of precipitation causing excessive run off.

13-3-3

Sites of particular significance would be:
Confluence of Willow Creek below Hayden Hill
Confluence of Willow Creek below Preston Canyon
Daisy Dean Spring

Sediment samplings should be included and monitored on these sites at least twice each season.

13-3-5

A citizen oversight committee be established to insure Lassen Gold Mining, Inc. comply with monitoring results.

13-3-6

In addition to bonding Lassen Gold Mining, Inc., its successor or Amax Gold be required to carry a liability insurance policy to protect down stream residents and property owners from toxic or hazardous materials entering the stream system normally or accidentally as a result of Lassen Gold Mining, Inc. activities.

13-3-7

In the event Lassen Gold Mining, Inc. fails (goes broke) parent company Amax Gold will fulfill the promise made by Lassen Gold Mining, Inc. and comply with final EIR/EIS reports. Eg: Protection of future air, soil and water contaminates from any and all materials used in Lassen Gold Mining, Inc. activities.

13-3-3

Please refer to the surface water monitoring sample location map, Figure 3.1-1, and Section 3.6.5. All of these sites are included in the monitoring plan. See the DKP report on water quality monitoring. Surface water samples will be collected on a quarterly basis. Total Dissolved Solids and Total Suspended Solids will be analyzed for each sample.

13-3-5

The public is welcome to create an oversight committee on their own behalf as many groups have done to varying levels. However, no regulations currently mandate this.

13-3-6

The financial assurance for the reclamation of the Project will be in the form of a surety bond. The amount is based on the costs to fully close the Project. See Section 4.14 of the revised Reclamation Plan (Appendix E). There are no legal requirements for insurance beyond this. Vendors transporting hazardous materials to the mine carry their own liability insurance.

13-3-7

The surety bond posted for the closure and reclamation of the Project will cover closure at any time during operations. See Section 4.14 of the revised Reclamation Plan (Appendix E).

Page 3

The EIR/EIS did not mention or address the impact on Eagle Lake and its residents which is about 30 miles south of Lassen Gold Mining operation. Eagle Lake is the second largest lake in California. Recreational boating and fishing activities are growing rapidly. Permanent residents and Water Quality Control Board are concerned with increased nitrate contamination of the clear, clean waters of Eagle Lake.

Respectfully submitted,

Ed Albaugh

J. E. (Ed) Albaugh
P.O. Box 1112
Adin, CA 96006

13-4-1 See Section 4.2.8.4, Population Distribution. The Eagle Lake Area, because of current waste disposal problems, and the relatively high cost of primary recreation and second-home housing in the area, is not anticipated to receive substantial growth from the Project. Trucks transporting hazardous materials to the mine will be encouraged to use Highway 395 to the Termo-Grasshopper cut-off as their primary route, thus avoiding transport along Eagle Lake.

Page: 1

PUBLIC COMMENT FORM

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

HAYDEN HILL MINING PROJECT

You may use this form to comment on the Draft EIR/EIS which has been prepared for the project named above. Attach additional sheets if needed.

Note: Comments need to be submitted in writing by 5:00 p.m. on May 28, 1991 in order to be considered for response in the Final EIR/EIS.

RECEIVED

MAY 28 1991

**LASSEN COUNTY
PLANNING DEPT.**

See attached pages 2 Through 4

NAME: Kenneth L. Jackson DATE: 5-27-91

ADDRESS: 284 Main St. P.O. Box 1448

Chester, CA. 96020

Please mail or deliver comments to one of the following:

USDI BLM-Susnaville
705 Hall Street
Susnaville, CA 96130

Lassen County Planning Dept.
707 Nevada Street, Room 236
Susnaville, CA 96130

USDA Modoc National Forest
44 North Main Street
Alturas, CA 96101

For related information, telephone: (216) 257-8111 ext. 271

14

The Draft EIR/EIS does not even mention the impact that this project could have on the watershed of Silver Shot Reservoir & Juniper Creek nor does it mention that this watershed is located less than one mile DOWNSTREAM the proposed Cyanide solution ponds. If any accident (caused by human error, or an Act of God) occurs my property becomes part of a Toxic Waste Clean-Up site, with myself liable for the cost of that Clean-up. I therefore ask that the Final EIR/EIS address the above mentioned impacts & include provisions which will provide an Adequate Insurance Policy to cover the cost of any Clean-Up with insurance premiums to be paid by Inyo County and for Amargosa Valley Inc with myself named as a First Loss Payee in the Amount of One Billion Dollars or for the Entire Cost of the Clean-Up which ever is greater.

I also request a written guarantee from Inyo County & Amargosa that their proposed mining operation (including the transporting, storage & distribution, retention of any, & Hill Road or any other aspect of the ~~the~~ mining operation) will NOT negatively impact the current health or populations of animal & plant species or my personal property or any State or Federal owned property. Especially the ~~the~~ Inyo County, Inyo County & Amargosa (not)

Pregnant ponds have been sized to allow storage of the 1,000 year recurrence interval, 24-hour duration storm event in compliance with Section 2546, Subchapter 15, Title 23, California Water Regulations.

The surety bond posted for the closure and reclamation of the Project will cover closure at any time during operations. The reclamation is designed to protect all of the resources at the site. The amount is based on the costs to fully close the Project. See Section 4.14 of the revised Reclamation Plan (Appendix E). There are no legal requirements for insurance beyond this.

Potential impacts to the Silver Flat and Juniper Creek watersheds could arise from operations at the ore processing facilities area, including the tailings impoundment and heap leach facility, (see Section 4.2.6.2). Facility design features should minimize the potential for surface water and groundwater impacts.

Sediment discharge to this watershed is anticipated to decrease as a result of surface water diversion and detention structures constructed in the facilities area.

If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection of water quality includes two regulatory documents (NPDES and WDRS) which contain criteria for operation and monitoring of portions of these facilities.

In 1986 I purchased property on the adjacent to Silver Lake Reservoir for the following

Reasons:

1. Abundant & diverse wildlife populations including: Bayshore Antelope, mule deer, sage grouse, Canada geese, mallard and pintail ducks, white pelicans, shorebirds, waterfowl, numerous species of shore birds. All present because of the excellent riparian habitat, a suitable & disappearing resource in the United States.
2. A rare location with panoramic views, clean air, ample water supply, and no noise.
3. A one-of-a-kind location for a summer cabin & a unique opportunity to develop separate zones for hunting, club

The Draft EIR/EIS for the Hayden Hill Project fails to address the impact of that project on the Silver Lake Reservoir & surrounding areas on all topics identified in "Potential Issues" as a result of the proposed project. These issues are: Biology & Topography, Soils, Vegetation, Wildlife, water resources, Air Quality, Land Use, Visual Resources, Recreation, Transportation, & Noise. And I request that the Final EIR/EIS do so.

4

14-3-1

Please note that Baseline Data on Canada Geese populations, including nesting sites, clutched eggs, successful hatchlings & gosling survival rates have been collected since 1987 on a large portion of Silver Flat Reservoir.

Sincerely,
Kenneth S. Jordan

14-3-1 CDFG has this information as part of the private refuge permit to Silva Flat. This information was used as background rather than baseline data because the reservoir is outside the study area.



DIAMOND VIEW-MCKINLEY-MEADOW VIEW

May 16, 1991

SUSANVILLE SCHOOL DISTRICT
940 Hospital Lane • Susanville, California 96130 • (916) 257-8200

RECEIVED

MAY 17 1991

MARSHALL S. LEVE, JR.
Superintendent

LASSEN COUNTY
PLANNING DEPT.

Merle Anderson
Lassen County Planning Department
707 Nevada Street, Room 236
Susanville CA 96130

Dear Merle:

The Susanville School District has reviewed the draft Environmental Impact Report presented on the Hayden Hill Mining Project. This letter is written to address solely the educational matters impacting this school district.

The report and Lassen Gold Mining, Inc. appear to have adequately addressed methods to mitigate the anticipated impact of the construction and operation of the Hayden Hill Mine on the Susanville School District. I wish to thank you and Lassen Gold Mining, Inc. for the opportunity to respond to this impact study.

Sincerely,

Marshall S. Leve, Jr.
District Superintendent

xtm

15-1-1 Comment acknowledged.

PUBLIC COMMENT FORM

RECEIVED

ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT DRAFT
MAY 09 1991

HAYDEN HILL MINING PROJECT

LASSEN COUNTY
PLANNING DEPT.

You may use this form to comment on the Draft EIR/EIS which has been prepared for the project named above. Attach additional sheets if needed.

Note: Comments need to be submitted in writing by 5:00 p.m. on May 28, 1991 in order to be considered for response in the final EIR/EIS.

THE ENTIRE PROJECT SHOULD NOT BE FACTED FOR REASONS AS OUTLINED BELOW:

- ① IT DESTROYS THE SURROUNDING LAND AND ENVIRONMENT- ANIMALS- TREES AND OTHER NATURAL RESOURCES.
- ② IT CREATES A DUST PROBLEM THAT COULD SPREAD OVER MANY MILES.
- ③ CITIZENS CANNOT BE SURE OF THE FINANCIAL STABILITY OF THIS EFFORT.

NAME: DOJ BARDELLA DATE: 5-7-91

ADDRESS: 903 Cottage St.

Susanville, Calif 96130

Please mail or deliver comments to one of the following:

Lassen County Planning Dept.
707 Nevada Street, Room 236
Susanville, CA 96130

USDI BLM-Susanville
705 Hall Street
Susanville, CA 96130

USDA Modoc National Forest
44 North Main Street
Alturas, CA 96101

For related information, telephone: (916) 257-8311 ext. 271

16-1-3 The Draft EIR/EIS addresses the commentor's concerns.

PUBLIC COMMENT FORM

RECEIVED
DRAFT
ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT
MAY 28 1991

HAYDEN HILL MINING PROJECT

You may use this form to comment on the Draft EIR/EIS which LASSEN COUNTY has been prepared for the project named above. Attach additional sheets if needed. PLANNING DEPT.

Note: Comments need to be submitted in writing by 5:00 p.m. on May 28, 1991 in order to be considered for response in the Final EIR/EIS.

17-1-1

As residents of the Adin area, and as a former rancher/farmer and lumber worker and my wife an employee of the Big Valley Joint Unified School District, we feel the effects of the Hayden Hill Mining Project appear to be very positive for the area. The economy has been greatly affected in recent years by various events occurring locally, statewide, and nationwide.

Since the project site was originally a mine many years ago, there seems to be little or no danger of it being dramatically changed in a negative way. The location also makes it unlikely it would impact the surrounding area adversely.

The project appears to be very well planned and every consideration made for community and environmental occurrences.

We believe this project should be given a positive recommendation.

NAME: Junior & Gerta Elzea DATE: May 21, 1991
ADDRESS: P.O. Box 224
Adin, Calif. 96006

Please mail or deliver comments to one of the following:

Lassen County Planning Dept.
707 Nevada Street, Room 236
Susanville, CA 96130
USDI BLM-Susanville
705 Hall Street
Susanville, CA 96130

USDA Modoc National Forest
44 North Main Street
Alturas, CA 96101

For related information, telephone: (916) 257-8311 ext. 271

17-1-1 Comment acknowledged.

RECEIVED

COMMENTS ON THE DRAFT EIR FOR THE PROPOSED
HAYDEN HILL MINING OPERATION

MAY 29 1991

BY MARTIN BALDING MAY 1991

LASSEN COUNTY
PLANNING DEPT.

THIS MONTH I VISITED THE HADEN HILL SITE AND INSPECTED AN EXISTING HEAP LEACH OPERATION, APPARENTLY A MODEL, PROTOTYPE OR DEMONSTRATION PROCESS. I WAS APPALLED TO SEE THE PLASTIC HEAP LINER IN TATTERS WHERE IT WAS EXPOSED. FURTHERMORE, I HAVEN'T SEEN ANY REFERENCES TO THE CONDITION OF THE LINER IN THE DRAFT EIR FOR THE PROJECT? IS IT POSSIBLE THAT THE AUTHORS FELT THAT THE LINER WASN'T WORTH MENTIONING, OR, IS IT POSSIBLE THAT THEY DIDN'T SPEND ENOUGH TIME ON THE SITE TO SEE THE CONDITION?? IN EITHER CASE IT IS A MAJOR CONCERN BECAUSE THE INTEGRITY OF THE PLASTIC LINER IS AT THE VERY HEART OF THE ENVIRONMENTAL SUCCESS OR FAILURE OF THE PROPOSED PROJECT.

A CALL TO TOM WILLIAMS OF STEFFEN ROBERTSON AND KIRSTEN (U.S.), INC... THE PREPARER OF THE EIR, WAS MADE ON MAY 28, 1991. IN RESPONSE TO MY QUESTION AS TO WHY THE EXISTING PLASTIC LINER WAS NOT MENTIONED IN THE EIR, TOM SAID IT "WASN'T ADDRESSED IN THE ENVIRONMENTAL DOCUMENT BECAUSE IT WASN'T CONSIDERED TO BE AN ENVIRONMENTAL PROBLEM AT THIS TIME."

THE COMPANY ESTIMATES THAT 3,000 TONS OF CYANIDE WILL BE USED DURING THE LIFE OF THE PROJECT. ACCORDING TO B.M. CLEM, GENERAL MANAGER OF WESTERN LABORATORIES, IN HIS REPORT ON HEAP LEACHING GOLD AND SILVER ORES, CYANIDE IS HIGHLY TOXIC AND "ONLY .20 GRAM OF SODIUM CYANIDE CAN BE LETHAL FOR HUMANS." AT THAT RATE, THE AMOUNT OF CYANIDE TO BE USED AT HAYDEN HILL COULD KILL ALL HUMAN LIFE ON THIS PLANET THREE TIMES OVER! THAT'S WHY THE HEAP LEACH PROCESS HAS BEEN CONTROVERSIAL, AND IT IS ONLY ONE OF THE REASONS WE MUST MOVE CAREFULLY WITH THIS PROJECT.

A SECOND MAJOR CONSIDERATION IS THAT THE PROponents OF THE HAYDEN HILL GOLD VENTURE ADMIT THAT THEY CAN'T POSSIBLY RESTORE THE MINING SITE TO ITS ORIGINAL SHAPE OR ENVIRONMENTAL CONDITION....AND STILL MAKE A PROFIT ON THE OPERATION. THIS MEANS THAT THE HUMAN PUBLIC, AND THE OTHER CREATURES INVOLVED, MUST MAKE A SACRIFICE IN ORDER TO ALLOW AMAX/HAYDEN HILL MINING, TO MAKE A PROFIT. NOW I'M NOT SAYING THAT WE SHOULDN'T ALLOW THE VENTURE, BUT I DO BELIEVE THAT WE SHOULD NOT BE A BIT TIMID ABOUT WHAT KIND OF RESTRICTIONS TO PUT ON THE PROJECT BEFORE A USE PERMIT IS ISSUED.

THE PROPOSED PROJECT MAY POSE A THREAT TO WILDLIFE AND HUMANS FOR A CONSIDERABLE TIME. WE DON'T JUST HAVE A RIGHT, WE HAVE AN OBLIGATION, TO SEE THAT THINGS ARE DONE AS CORRECTLY AS POSSIBLE TO PROTECT OUR ENVIRONMENT NOW, AND IN THE FUTURE. FINALLY, IF THERE IS ANYONE WHO BELIEVES THAT ACCIDENTS WON'T HAPPEN, ASK ABOUT THE 6,000 GALLONS OF DIESEL FUEL THAT SPILLED INTO THE CREEK BY HAYDEN HILL DURING THE WINTER OF 1990! THE UNEXPECTED WILL HAPPEN, EVEN WHEN CAUTION IS USED. LOOKING AHEAD FOR POSSIBLE PROBLEMS MAY PREVENT SOME ACCIDENTS AND MISTAKES, FOR EVERYONE'S BENEFIT.

18-1-1 The exposed liner at the site is not an environmental problem at this time or in the future. The liner is part of a test leach system constructed in the early 1980s and abandoned in 1987 by the previous owners of the site. The heap is not in operation and has not been in operation since 1986. The heap had to meet requirements for abandonment at that time. Subsequently, LGMI has tested the material and received confirmation from CRWQCB that it does not require any special care. Therefore, the old liner is not containing any hazardous substance or material and has no effect of any sort on the environment. Mr. Williams' conversation addressed these issues.

18-1-3 Please refer to Section 2.2.8.13, Sodium Cyanide. This section discusses concerns related to the use of cyanide in a heap leach operation. In addition, please refer to the SPCC and ERP in Appendix L. The operating experience of LGMI personnel has allowed the operator to become very familiar with storage and handling procedures of cyanide.

SUGGESTED REQUIREMENTS TO BE INCLUDED IN THE FINAL EIR:

- 8-2-1 1. A FULL TIME INSPECTOR SHOULD BE ALLOCATED FOR THE PROJECT. THE INSPECTOR MUST NOT BE AN EMPLOYEE OF AMAX, AND SHOULD NOT ANSWER TO THE COMPANY. THE PERSON WOULD MONITOR, TEST, INSPECT, OBSERVE ETC., AND REPORT TO PUBLIC AGENCIES SUCH AS THE USFS, DFG, BLM, SWRCB, CAL OSHA, U.S. BUREAU OF MINES, THE PUBLIC, AND LASSEN COUNTY.
- AN INSPECTOR, WITH FULL ACCESS TO PLANT RECORDS, AND WITH A GOOD KNOWLEDGE OF THE OPERATION, WOULD BE ABLE TO REPORT ON WORKING CONDITIONS AND ENVIRONMENTAL CONCERNS. THE CRUSHING OPERATION, LEACHING MOUND, PREGNANT SOLUTION, BARREN SOLUTION, CARBON RECOVERY, ETC. WOULD ALL BE MONITORED. ANIMAL KILLS WOULD BE RECORDED AND SAFETY CONDITIONS WOULD BE REPORTED. EMPLOYEE SAFETY WOULD BE ALSO BE A CONCERN. AN INSPECTOR MIGHT EVEN PAY HIS WAY BY HELPING LASSEN COUNTY ESTIMATE THE VALUE OF THE MINE FOR TAX PURPOSES. THE COST FOR SUCH A PERSON COULD BE SHARED BY THE AGENCIES SERVED.
- 18-2-3 2. INCREASE THE AMAX PROPOSED RECLAMATION BOND FROM 2.8 MILLION TO 6 MILLION DOLLARS OR MORE. IT IS INCONCEIVABLE THAT THE PROPOSED BOND WILL BE ENOUGH FOR CLEANUP IN SIX TO TEN YEARS FROM NOW. IF BY CHANCE THERE IS AN EXCESS OF FUNDS IT CAN BE RETURNED TO AMAX.
- 18-2-4 THE BOND SHOULD BE WITHHELD UNTIL THE SOIL HAS BEEN THOROUGHLY TESTED FOR COMPLIANCE WITH THE ORIGINAL SPECIFICATIONS FOR TOXICITY. IT MAY TAKE A LOT OF LEACHING TO REMOVE ENOUGH OF THE ORIGINAL 3,000 TONS OF CYANIDE AND THE PUBLIC CERTAINLY SHOULD NOT END UP WITH THE RESPONSIBILITY FOR EXCESS CONTAMINATION.
- IT IS ALSO EXTREMELY IMPORTANT TO SEE THAT THE BOND (INSURANCE) COVERS THE POTENTIAL DAMAGE TO PROPERTY, PUBLIC OR PRIVATE, OFF THE SITE, AS WELL AS ON, THAT WOULD INCLUDE PROPERTY, WELLS, STREAMS, PLANT, HUMAN, AND ANIMAL LIFE.
- 18-2-6 3. IN COOPERATION WITH THE CALIFORNIA DEPARTMENT OF FISH AND GAME, PLACE A VALUE ON ANIMAL LIFE AND CHARGE AMAX FOR EACH KILL. THIS WILL TEND TO ENCOURAGE NETTING THE PONDS AND PROTECTING ANIMALS FORM CYANIDE CONTAMINATION. ANY DEAD ANIMALS FOUND IN THE SURROUNDING AREA SHOULD BE TESTED FOR CHEMICAL POISONING.
4. WATER, PLANTS AND ANIMALS IN THE AREA, OR DOWNSTREAM, OR DOWNWIND, SHOULD BE TESTED BEFORE THE MINING OPERATION BEGINS. THIS WILL ESTABLISH A BASIS FOR FUTURE TESTS AND MONITORING. THIS "CONTROL" INFORMATION COULD BE VALUABLE IN THE FUTURE TO DETERMINE THE EFFECTS OF THE MINE.
- 18-2-8 5. AT THE END OF THE OPERATION A CERTAIN NUMBER OF LARGER TRANSPLANT PINES SHOULD BE PLANTED ALONG WITH THE USUAL SEEDLINGS. THIS WOULD SERVE TO IMPROVE THE AESTHETICS AND TEST THE SOIL FOR CONTAMINATION.
- 18-2-9 6. REQUIRE THAT VAN POOLS BE AVAILABLE TO ALL WORKERS. NOT JUST AMAX, AS STATED BY THE COMPANY, BUT FOR THE CONTRACTORS EMPLOYEES ALSO. THIS WILL REDUCE THE ACCIDENT RISK AND THE TRAFFIC ON LASSEN COUNTY HIGHWAYS.

- 18-2-1 See Appendix D. It is in the Applicant's best interest to report all compliance and non-compliance accurately. Fines are levied to individuals who are signatory to compliance records and reports for fallacious statements. In addition, the County Compliance Officer is not paid by the Applicant, and oversees the program.
- 18-2-3 The bond amount is based on actual costs to close and reclaim the site. The amount is conservative in that it is based on the total acres to be disturbed. In reality, this total will never be reached. It will take several years for the Project to reach total disturbance and by that time concurrent reclamation will have a great deal of that disturbance reclaimed. In addition, the bond amount has been revised to reflect total closure and reclamation costs, including monitoring. See Section 4.14 of the revised Reclamation Plan (Appendix E).
- 18-2-4 The commentor's concerns are addressed in Sections 4.8 and 4.14 of the revised Reclamation Plan (Appendix E).
- 18-2-6 See Section 4.2.5.2.Cyanide. Section 2.2.8.10 of the Proposed Action states that all pregnant and barren solution ponds will be netted. Netting has proven to be effective in excluding wildlife at 95 operating Nevada mines. The tailings pond solution will be neutralized to cyanide concentrations not lethal to wildlife. Cyanide levels in the tailings pond will be monitored daily and detoxification systems adjusted accordingly. If mortalities do occur at this concentration, measures to correct the situation and prevent additional mortalities will be taken in cooperation with CDFG, CDFG and the Applicant have developed a Wildlife Habitat Mitigation and Management Plan. The Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4-4.2.5.5 and Tables have been revised to reflect the contents of this plan. The mitigation plan is located in Appendix I. The Applicant is required to report wildlife mortalities to CDFG, BLM, and USFWS.
- 18-2-8 The transplantation and storage of plants found on site, until they can be transplanted back to a permanent location, has not been determined to be necessary. The plant materials associated with the site are readily available and the survival rate of plant stock transplanted two times in less than eight years is questionable.
- 18-2-9 Transportation impacts presented in Sections 2.2.7.1 and 4.2.12 include traffic considerations for contractors and other non-LGMI employees who commute to the Project site during the pre-production and operational phases of the Project. LGMI has adopted policies which encourage ride sharing and transportation pooling.

18-3-1

Three alternative routes for the power supply into the Project were evaluated. The Proposed Action route was determined to be most efficient, cost effective and least environmentally damaging (see Section 2.3.3.4).

Long-term growth inducing impacts of the proposed transmission line adjacent to ranching lands may occur as a result of the Proposed Action. Under the Proposed Action, Surprise Valley Electrification Corporation (SVEC) would own and construct the transmission line. As a participant in the Rural Electrification Association, SVEC assists both public and private land owners in accessing the electrical power grid.

Currently, properties along Highway 139, a distance of 11 miles south of the Parks Ranch Road to the Hayden Hill Road are not connected to the electrical power supply grid. SVEC projects such as the one included in the Proposed Action would provide new opportunities for land development to the surrounding rural areas. The significance of this impact varies with the viewpoint and is discussed in Section 4.2.8.9. Please also see Sections 2.2.7.3 and 3.8.13.

The Power Supply Alternative would mitigate the growth inducing impacts resulting from the availability of power along Highway 139. This alternative has been identified as a preferred alternative, therefore, it is likely it will become a condition of Project approval.

Baseline studies and environmental analysis along the power line corridor for power line installation were completed and incorporated in this document. Please note that an EIR need not engage in a speculative analysis of environmental consequences for future, unspecified development.

HADEN HILL EIR PAGE 3

18-3-1 7. THE 10,000 KVA POWER LINE PROPOSED FOR THE PROJECT MAY HAVE A MAJOR EFFECT ON THE PRESENTLY "POWERLESS" AREA TO THE NORTH OF HAYDEN HILL. THIS INSTALLATION NEEDS AN ENVIRONMENTAL STUDY TO DETERMINE THE BEST ROUTE AND THE POTENTIAL EFFECT ON THE AREA.

THESE ARE SOME OF CONCERNS THAT I HAVE ABOUT THE PROPOSED GOLD MINING OPERATION AT HAYDEN HILL. PLEASE GIVE THEM CAREFUL CONSIDERATION. IF YOU HAVE ANY QUESTIONS PLEASE CALL OR WRITE.

SINCERELY,

Martin Balding

MARTIN BALDING
508-450 STONY LANE
SUSANVILLE, CA 96130
916 825 3481

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MAY 29 1991

LASSEN COUNTY
PLANNING DEPT.
FAX 391-1484

LAW OFFICE OF
ROGER BEERS
260 CALIFORNIA STREET, SUITE 803
SAN FRANCISCO, CA 94111

May 28, 1991

ROGER BEERS
KATHRYN LODATO

Merle Anderson
Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, CA 96130

Re: Comments of Larry Newhall, Natural Resources Defense Council, and The
Wilderness Society on the Hayden Hill Project Draft Environmental Impact
Report and Environmental Impact Statement and the Draft Hayden Hill Resource
Plan

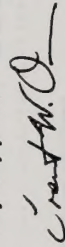
Dear Mr. Anderson:

Thank you for this opportunity to review and submit comments upon the Draft
EIR/EIS for the Hayden Hill Project and the Draft Hayden Hill Resource Plan. We
particularly appreciate your kind permission to file these comments on May 29 because
of a serious computer problem in our office late last week.

As you will see from our comments, the Hayden Hill Draft EIR/EIS fails to meet
the requirements of state and federal laws to protect the environment from the adverse
effects of hardrock mining. The document does not provide an adequate assessment of
the potential environmental impacts of the proposed project, nor sufficient measures to
mitigate those impacts properly. The only solution to the deficiencies of the Draft
EIR/EIS is the preparation and circulation for public review of a revised draft.

Thank you for your attention to our comments. Do not hesitate to contact me if
you or your colleagues on the review team have any questions about any of our concerns.

Very truly yours,



Trent W. Orr

RECEIVED

MAY 29 1991

COMMENTS ON

LASSEN COUNTY
PLANNING DEPT.

THE DRAFT ENVIRONMENTAL IMPACT REPORT AND

ENVIRONMENTAL IMPACT STATEMENT FOR THE

HAYDEN HILL PROJECT

Submitted on Behalf of

Larry Newhall
Natural Resources Defense Council
The Wilderness Society

ROGER BEERS
TRENT W. ORR
Attorneys for Larry Newhall
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Natural Resources Defense Council
71 Stevenson St., #1825
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INTRODUCTION

This document contains the comments of Larry Newhall, Natural Resources Defense Council (NRDC), and The Wilderness Society (TWS) on the Draft Environmental Impact Report/Environmental Impact Statement for the Hayden Hill Project (referred to herein for brevity as "Draft EIR" or "EIR") and the related Draft Hayden Hill Resource Plan. Mr. Newhall is the owner of property around Dillon Lake, to the south of the proposed project, and at Silva Flat Reservoir, to the southwest, which properties he manages as waterfowl and wildlife preserves -- Private Lands Wildlife Management Areas -- in cooperation with the California Fish and Game Commission.

NRDC and TWC are both national nonprofit environmental membership organizations. NRDC has over 170,000 members and contributors, approximately 36,000 of whom reside in California. TWS has nearly 400,000 members, approximately 60,000 of whom reside in California. Both organizations have long been concerned about the significant adverse environmental impacts associated with hard-rock mining activities and have sought to ensure that such activities be conducted in an environmentally-responsible manner and only where proper reclamation is assured.

The Hayden Hill Project is a proposal by Lassen Gold Mining, Inc. (LGMI) to mine gold-bearing ore from Hayden Hill in Lassen County and to extract gold from this ore at processing facilities on the project site, an area of some 2,822 acres of federal and private land. 1-7 (Note: Unless otherwise indicated, all page references herein are to the Hayden Hill Draft EIR). The project would disturb approximately 950 acres within the project area through excavation, construction of facilities, disposal of waste rock and

tailings, road building, and other activities. *Id.* At present, the area encompasses five major vegetation types and supports a significant wildlife population. 3-17, 3-26-40. Indeed, 530 acres in the southwest corner of the project area lie within an existing California game refuge but will be lost to this purpose if the project goes forward. 4-111.

Before the project can proceed, the Bureau of Land Management (BLM) must approve LGMI's plan of operations and Lassen County must approve the reclamation plan. Surface Mining and Reclamation Act of 1975 (SMARA), Cal.Pub.Res.C. § 2710 *et seq.*, § 2770. The National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 *et seq.*, and the California Environmental Quality Act, Cal.Pub.Res.C. § 21000 *et seq.*, require that these approvals be preceded by the preparation of an adequate environmental impact statement (EIS) and environmental impact report (EIR) respectively. The BLM and Lassen County, with the cooperation of the U.S. Forest Service, have issued a joint EIR/EIS to attempt to address the requirements of both laws.

We believe that the Draft EIR is fundamentally inadequate to meet CEQA and NEPA requirements and that, for a host of reasons specified below, a revised draft EIR/EIS on the Hayden Hill project must be prepared and circulated for full public comment. We also believe that the Hayden Hill Draft EIR fails to demonstrate that reclamation of the project area will be successful, as required by SMARA. Despite its informational inadequacies, the Hayden Hill EIR reveals that the proposed project is virtually certain to result in widespread and significant adverse environmental impacts on the project area and the surrounding region. The EIR also suggests the very real possibility that reclamation attempts will be wholly or partially unsuccessful and that the

19-2-3

The draft EIS described the impacts the Project would have on the environment to the degree specified by NEPA regulations and CEQA guidelines. Mitigation criteria were presented in Chapter 4.0. The document, as well as the mitigation criteria, have since been updated. Please see Chapter 4.0 and Appendices D, E, G, I, L, M, and N. The EIR/EIS does not suggest the possibility that reclamation attempts will be unsuccessful. The revised Reclamation Plan, Appendix E, provides for reclamation success evaluation (Section 4.9) and established goals for post-mining uses, including grazing and wildlife habitat.

19-2-4

The EIR/EIS does not suggest the possibility the reclamation attempts will be unsuccessful. The revised Reclamation Plan, Appendix E of the Final, provides for reclamation success evaluation (Section 4.9) and establishes goals for post-mining uses, including grazing and wildlife.

site will not be available for such post-mining uses as wildlife habitat, preservation of rare plant communities, recreation, enjoyment of scenic values, and livestock grazing. Under these circumstances, we have no alternative but to oppose the project's approval.

The functions of an EIR and an EIS are similar. They compel a decisionmaker to give serious weight to environmental considerations in determining what action to take respecting the proposed project. See, e.g., *Foundation for North American Wild Sheep v. Department of Agriculture*, 681 F.2d 1172, 1177 (9th Cir. 1982); *People ex rel. Department of Public Works v. Bosio*, 47 Cal.App.3d 495 (1975). Further, they encourage public participation in agency decisionmaking by requiring "full disclosure" of the environmental consequences of a proposed action. See, e.g., *Trout Unlimited v. Morton*, 509 F.2d 1276 (9th Cir. 1974); *People v. County of Kern*, 39 Cal.App.3d 830 (1974). They also provide an evaluation of the proposal's benefits in light of the associated environmental risks and in comparison with alternative courses of action. See, e.g., *Natural Resources Defense Council v. Morton*, 458 F.2d 827 (D.C.Cir. 1972); *No Oil, Inc. v. City of Los Angeles*, 13 Cal.3d 68 (1975). By providing full disclosure of the environmental consequences of a proposed project in advance, the EIS or EIR serves as a basis for early resolution of conflicts without needless expenditures of time, money, and effort. On the other hand, when an EIR or EIS fails to disclose environmental effects fully, delay and poor decisions result.

In the comments that follow, we will go through the various resources that the proposed action would affect and point out the inadequacies of the Hayden Hill EIR's treatment of the consequences of the proposed gold mining operations on each resource.

We will then examine various of the alternatives to the proposed action that were analyzed (or dismissed from detailed analysis) in the EIR. We will look at the draft mitigation monitoring plan, which, in the form presented, is not a plan at all, but merely the general framework for creating a plan. Finally, we will address the draft reclamation plan, which is entirely too vague and speculative to meet the requirements of SMARA, and make concrete suggestions concerning the elements that would be necessary to an adequate reclamation plan.

I. VEGETATION

A. Overall Effects of the Proposed Action

The proposed action would lead to the loss of 950 acres of existing vegetation, comprised chiefly of five different vegetation types. 4-23. These are low sagebrush, upland shrub, Jeffrey pine - mountain shrub, grassland, and wetlands. 3-17. SMARA requires assurances that areas subjected to surface mining will be successfully reclaimed. Cal.Pub.Res.C. § 2712(a). However, as we will demonstrate in this discussion and our examination below of the Draft Reclamation Plan, the EIR assumes with no real basis that revegetation as envisioned in the sketchy and theoretical Reclamation Plan is appropriate to the site and that it will succeed.

For this reason, there is no realistic discussion in the EIR of the actual likelihood of success of revegetation nor of the adverse consequences for wildlife, soil, recreation, and other resources if revegetation efforts fail wholly or in any significant portion of the project area. Further, as will be discussed in greater detail when we examine the Reclamation Plan below, the proposed action does not envision the revegetation of the

project area solely with plants native to the site, nor does it contemplate anything remotely approaching a return to the existing botanical diversity of the site following the cessation of mining activities.

In sum, the proposed action, if implemented, would do significant long-term -- and, in several respects, irreversible -- damage to the vegetation resources of the Hayden Hill area. In what follows, we examine the EIR's treatment of each of the five vegetation types present in the project area and address several other specific vegetation issues.

B. Low Sagebrush

The EIR acknowledges that the proposed action would destroy 355 acres of the low sagebrush vegetation community, nearly 60% of such vegetation within the project area. 4-24. "The Low Sagebrush vegetation is adapted to local duripan soils common to this area. Once the duripan soils are disturbed, it is unlikely the vegetation re-established on the new soils will be identical to the existing Low Sagebrush vegetation." *Id.* Despite this admission, the EIR does not reveal what vegetation would be used to replace the low sagebrush (presumably some combination of the seed mixes proposed in the Draft Reclamation Plan, E-20-21), nor, in consequence, does it properly examine the full impacts that the replacement of the existing habitat with an artificially-propagated vegetation community would have on wildlife. An analysis of these impacts and of the effectiveness of mitigation measures proposed to counter them must be provided in a revised draft EIR.

C. Upland Shrub

The proposed action would destroy 244 acres of upland shrub vegetation and only reclaim 210 acres, for a net loss of 31 acres of this vegetation type. 4-24. While the EIR asserts that "reclamation activities will return the habitat value [of this vegetation type] in a relatively short time," 4-25, again, the document nowhere reveals what species of plants, native to the site or non-native, will be employed for revegetation and leaves far too vague the time in which revegetation is expected to occur. Without this information, it is impossible to assess the accuracy of the EIR's assertions regarding the re-emergence of the lost habitat values.

D. Jeffrey Pine - Mountain Shrub

Under the proposed action, 296 acres of Jeffrey pine - mountain shrub vegetation type would be lost. 4-25. Of this acreage, only 194 acres would be reclaimed, for an outright loss of 102 acres of vegetative cover and habitat values. *Id.* Moreover, 105 acres of commercial timberland (land capable of producing at least 20 cubic feet of timber per acre per year) contained in the Jeffrey pine - mountain shrub community would be lost to the project and could not be reclaimed as commercial timberland. *Id.* The EIR's admission that reclamation and natural reforestation are "unlikely, at best," to recreate commercial timberland casts doubt on the likelihood and degree of success of reclamation of the Jeffrey pine - mountain shrub vegetation in general.

This vegetation type has the highest wildlife "richness and diversity" of the habitat types on the project site. 4-37. Despite this, and despite the admitted uncertainty as to the likelihood of reclamation success for this vegetation type, the only mitigation that the

19-6-1

The additional information included in the revised Reclamation Plan (Appendix E), plus that provided in the original Reclamation Plan, addresses the commentor's concerns. The time for revegetation is tied to the success achieved and is a necessary uncertainty. However, the monitoring and control measures provided address this.

19-6-2

The involved reclamation and botanical experts agree that revegetation, with pine, and other shrubs and plant material, will occur and cover and habitat values will return. However, commercial quality timber may not return. Undue speculation on the success of the reclamation, beyond what has been provided, is not warranted in an EIR/EIS.

19-6-2

- 19-7-1 It is agreed upon, by the involved agencies, that the loss of the 102 acres of commercial timber land, of the quality found at the site, is not significant. The productivity of this timber is generally low and trees of merchantable size are infrequent. The revised Reclamation Plan (Appendix E) provides for reclamation of the forested areas with vegetation, including Jeffrey pine seedlings, which will return the habitat, cover and density values to the site.
- 19-7-2 The revised Reclamation Plan (Appendix E) includes additional information which addresses the commentor's concerns.

19-7-1 EIR proposes aside from attempts at reclamation is that LGMI protect an unspecified amount ("the maximum amount of available of [sic] forest habitat") of forest land elsewhere in the vicinity until the site is reforested. 4-44. A revised draft EIR should provide such obviously critical information as how much forested land LGMI would be required to protect in the area (which should be no less than the 296 acres destroyed), how long LGMI would be required so to protect such land, and what provision would be made for permanent replacement of the irretrievably-lost 102 acres of this vegetation type, as well as permanent replacement of the other 194 acres, should reclamation of Jeffrey pine - mountain shrub habitat fail altogether on the project site. The effectiveness of these mitigation measures should be analyzed in the revised EIR.

E. Grassland

The proposed action would cause the loss of 35 acres of native grassland and 13 acres of planted pasture. 4-26. As with the other vegetation types, no specifics are given concerning the plant species with which reclamation of these grasslands would be accomplished. Indeed, given that some of the grasslands affected will be buried beneath the tailings impoundment and the heap leach pad, it is unclear whether they would be replaced with grassland of any sort. *Id.* Further, a look at the seed varieties tentatively proposed in the Draft Reclamation Plan leaves the reader wondering which among these are native plants appropriate to the reclamation of grasslands or any other existing vegetation type. E-20-21. The revised EIR should reveal the extent to which the grasslands lost will be replaced with grasslands and the extent to which these will provide the habitat values of the existing grasslands.

19-8-1

The mitigation plan for wetlands is included in Appendix I. The wetlands mitigation plan calls for the creation of an 18.5 acre self-sustaining wetland in Section 2. We feel that intermittent stream impacts have been adequately addressed, given the dry nature of the site. The "no net loss" directive is a directive of the Corps of Engineers and the EPA, and will be attained to the level determined by these agencies. Impacts will be mitigated, at this site, at a ratio of about 3:1. The NEPA regulations and CEQA guidelines require the impacts to the environment be addressed. We feel the impacts resulting from the loss of the wetlands located at the site have been adequately addressed.

F. Wetlands

According to the EIR, the proposed action will destroy 6.55 acres of wetlands.

4-27. Further, the EIR states that 1,315 lineal feet of intermittent stream channel would be disturbed and 80 lineal feet of permanent stream channel destroyed by the proposed action. 4-38. The exact nature and estimated longevity of the intermittent stream damage should be disclosed. As discussed in Part IV of these comments, below, there is also a risk, not adequately examined in the EIR, that excavation of the mine pit would interrupt shallow groundwater flows and adversely affect wetlands south and southwest of the project site.

The only mitigation mentioned in the EIR for any of these adverse impacts on wetlands is the statement that LGMI will have to obtain an Army Corps of Engineers Section 404 permit and comply with the mitigation measures it requires. 4-30. Both federal and state environmental policies require no net loss of wetlands to development projects. In light of these policies, the EIR should discuss where and how LGMI would be required to create new wetlands to replace the pond and stream habitats destroyed by its mining activities. The EIR suggests that mere enhancement of existing wetlands would be adequate mitigation for the proposed obliteration of wetlands on the project site. 4-45, I-14. Federal and state law requires more, and a revised EIR must set forth specific measures to replace lost wetlands and analyze the effectiveness of such measures.

G. Specific Vegetation Issues

1. Rare plants

Antennaria flagellaris, commonly known as creeping pussytoes, is a special status

19-9-2

It is not the policy of any of the involved agencies to transplant threatened or endangered species. Protection is the key in these cases. We believe the impacts to these species have been adequately avoided and minimized as addressed in Section 4.2.4.

Further research (Bio-Resources, May 1991, Addendum, *Antennaria flagellaris* at Hayden Hill, California) indicates the 20% estimate is correct for the known population. However, the large amount found in the studies were located in easy access areas, adjacent to roadways. Large tracts of land remain unsearched. If the area searched and numbers found are correlated to the available habitat unsearched, the population is estimated to be quite large. In addition another population of equal size and density was located near Silva Flat. We believe the impact to this species is insignificant based on the present research, and that additional study is unwarranted.

19-9-3

Further research (Bio-Resources, May, 1991, Addendum, *Antennaria flagellaris* at Hayden Hill, California) indicates the 20% estimate is correct for the known population. However, the large amount found in the studies were located in easy access areas, adjacent to roadways. Large tracts of land remain unsearched. If the area searched and numbers found are correlated to the available habitat unsearched, the population is estimated to be quite large. In addition, another population of equal size and density was located near Silva Flat. We believe the impact to this species is insignificant based on the present research, and that additional study is unwarranted. D. Numerous populations of *D. Douglasii* occur in the region. It is the opinion of the involved agency specialists that no further mitigation is required. In addition, it is not the policy of any of the involved agencies to transplant species such as this.

species under CEQA because it is believed to have very limited populations in California. 3-18. Indeed, as recently as 1989, the only known population of this species in the Hayden Hill area was on the proposed project site. *Id.* Since that time, 46 populations have been discovered in the area, but the population jeopardized by the project still represents 20% of all of the individuals of this species known to exist in California. 4-27.

Amazingly, despite the rarity of *A. flagellaris*, the significant proportion of its total California population that would be destroyed by the proposed action, and the distinct possibility that the population on the project site has unique genetic characteristics, especially as compared with distant populations in Oregon (see 3-18), the proposed action carries no requirement whatsoever that attempts be made to transplant all or part of this population, to collect seeds for germination, or to reintroduce it to appropriate areas of the project site during final reclamation. CEQA demands that agencies adopt feasible mitigation measures in order substantially to lessen or avoid otherwise significant adverse environmental impacts. Cal.Pub.Res.C. § 21002. Given that *A. flagellaris* is a special status species under CEQA, it is particularly obvious that such measures must be formulated and adopted to ensure the survival of a substantial portion of the population of this rare plant on the proposed project site.

Project mitigation should also require that *Draba douglasii*, Douglas's draba, be propagated from seed or selectively collected from nearby populations and reintroduced to the project area during final reclamation. Five populations of this plant, which is a species of concern listed by the California Native Plant Society, would be destroyed by the proposed action. 3-18.

19-9-2

2. Reintroduction of diverse native plants

19-10-1

Our concerns about the revegetation of the project site after the completion of mining activities are not limited to the reintroduction of rare plant species. We are also concerned that the vegetation planted during final reclamation replicate as closely as possible the diverse variety of plant species that currently inhabit the site. The plant list provided in Appendix F identifies approximately 200 different species of plants that grow on the project site. At the same time, the list of seed mixes tentatively proposed for use in revegetation contains a total of 16 species, to which one can add the Jeffrey pine seedlings proposed for planting during revegetation, for a total of 17 species. E-20-21.

The list in Appendix F does not indicate whether the plants currently present are native or introduced species, nor does the Draft Reclamation Plan specify whether the 16 species it proposes for seeding are native or non-native, or whether these species currently exist on the project site. A revised EIR must contain this information if the public and the agency decisionmakers are to be able to make any reasoned assessment of the appropriateness of the proposed revegetation.

But even without that information, it is absolutely clear that the replacement of 200 species with a mere 17, some of which are not even among the plants that presently exist on the site, is not sufficient mitigation for the project's severe adverse impacts on the existing vegetation and its habitat values. The responsible agencies cannot simply assume that natural revegetation will supply some significant share of the deficit of over 180 plant species within any but a geological time frame. A properly revised draft EIR for the proposed project should provide that a much larger variety of plants, native to

19-10-1

We believe that maintaining sufficient diversity including native plant species, is covered adequately in the revised Reclamation Plan (Appendix E).

The seed mixes, shrubs, and trees proposed for reclamation meet or exceed the involved agency requirements for site specificity and diversity.

Reclamation trials will be on-going through the Project. Concerned agency personnel will have access to this information and this input will be considered at the time of implementation.

the site, be employed in reclamation efforts. Toward this end, the Reclamation Plan should contain specific, detailed procedures for collecting seeds and specimens of a variety of native species, propagating seedlings and transplanted plants, and reintroducing these species to the site following the completion of mining operations. As we will discuss at greater length in specifically addressing the Draft Reclamation Plan, vegetation density and diversity, as well as cover, should be required criteria for assessing of the success of reclamation.

II. SOILS

Closely related to the issue of the vegetation resources of the proposed project site is the issue of the protection and restoration of the soils upon which that vegetation and the wildlife it supports depend. The proposed action would excavate 805 acres of soil and disturb another 145 acres. 4-12. The proposed massive movement and disturbance of area soils, and the stockpiling of huge quantities of soil for eventual use in reclamation, pose a series of threats to this resource: increased dangers of erosion, loss of soil values through homogenization, decreased productivity as a result of stockpiling, and insufficient topsoil supplies for adequate reclamation.

A. Erosion

The EIR provides that the Reclamation Plan "shall include a detailed, site specific, and comprehensive soil erosion control plan," and describes in general terms the elements that this plan should contain, including "plans and specifications for erosion control structures and prescriptions sufficiently detailed to permit pre-construction review." 4-19. Sadly, the Draft Reclamation Plan provided in Appendix E of the EIR

does not contain anything remotely like a "detailed, site specific, and comprehensive soil erosion control plan." Instead, it contains a very general two-page discussion that covers stockpiling, grading and stabilization, and surface and seedbed preparation, E-17-19; another brief discussion of stockpiling, E-24-25; and a map which shows three large areas as generic "growth media stockpiles." App. E, Fig. 3. No mention whatsoever of soil erosion is made in the very brief section of the Draft Reclamation Plan dealing with monitoring of mitigation success.

19-12-2

It is impossible to assess the likely impacts of the proposed mining operations and of the subsequent reclamation activities in the absence of any specifics about erosion control measures during and after operations. A revised draft EIR must contain erosion control plans and prescriptions sufficiently detailed so that the public and the agency decisionmakers truly understand the seriousness of the soil impacts posed by the proposed action and the extent to which site-specific control measures could mitigate such impacts.

B. Loss of Duripan

19-12-3

Under the proposed action, the loss of a large area of low sagebrush vegetation type would be the direct result of the destruction through various mining activities of the shallow, silica-indurated hardpan -- duripan -- that typically supports this vegetation type. 4-19. According to the EIR, this soil type cannot be reclaimed. 4-24. The EIR is confusing regarding the total acreage of duripan soils that will be disturbed: Is it the 380 acres described on 4-21 as a significant long-term, adverse impact on the soil resource, or is it the 355 acres of low sagebrush "adapted to local duripan soils" that would be lost to

19-12-2

The Soil Erosion Control Plan is included in the Final Reclamation Plan (Appendix E). The Final Reclamation Plan has been prepared in cooperation with the BLM, USFS, and County in conjunction with the CRWQCB, the ARB, and the California Division of Mines and Geology.

19-12-3

The Low Sagebrush vegetation is adapted to local duripan soils in the Project area. Once the duripan soils are disturbed, it is unlikely the vegetation re-established on the new soils will be identical to the existing Low Sagebrush vegetation. This impact is long-term. Re-topsoiling and seeding of these areas, however, is expected to result in near complete re-vegetation, therefore, the cover disturbances in reclamation vegetation type are considered short-term. The disturbance of 380 acres of duripan soils will occur as a result of the Proposed Action. Approximately 355 acres of Low Sagebrush vegetation will be disturbed as a result of the Proposed Action. The occurrence of duripan soils with Low Sagebrush vegetation is related, but not exclusively synonymous.

19-13-1 Due to similarity of soil horizons and low organic matter content of the A-horizon, soil horizons will not be segregated. Please also refer to Section 4.2.3.3 and Appendix E.

the project, as stated on 4-24?

C. Homogenization and Loss of Productivity of Stockpiled Soil

The EIR acknowledges that the topsoil stockpiled for reclamation purposes with be adversely affected by homogenization with other soils that could occur during stripping, storage, placement, and other moving activities. 4-19. We are particularly concerned to see that the EIR only identifies three generic areas for topsoil storage and makes no specific provision for segregating soils. To mitigate problems of soil homogenization, the EIR merely offers that field trials will be established "at the beginning of mining" to determine reclamation management requirements for various topsoils. 4-20. As with erosion control measures, specific measures regarding the proper management of different topsoils must be described and analyzed in a proper EIR, not left until mining has begun. In the absence of such specifics about the handling and management of topsoil resources, any conclusions that the EIR attempts to draw about the project's ultimate impacts on soils in the project area, and, thus, on vegetation, wildlife, and other resources ultimately dependent upon soils, are so speculative as to be meaningless.

Once the topsoils are stockpiled, no matter how carefully they are segregated by type, they are likely to become less productive over the period of their stockpiling because of the declining microbial decomposition of organic matter in these soils. 4-19. As with erosion control measures and proper management of various types of topsoil, protection and restoration of the productivity of stockpiled topsoil should be provided for and analyzed in far greater detail than the general paragraph the Draft EIR provides.

19-14-2

It is anticipated, with the collection and use of the B horizon soils, sufficient topsoil will be available. See Sections 3.3 and 4.2.3 for more information on this subject. Speculation of the impacts of a shortage of this material was found to be unwarranted.

4-20. Topsoil preservation and reuse in reclamation have been required of mining operations for some years; a revised draft EIR should survey experiences with various management methods in the past, evaluate their effectiveness, and propose mitigation measures that build on these past experiences.

D. Sufficiency of Stored Soil for Proper Reclamation

A very troubling element of the EIR's treatment of the soil resource and reclamation of the project site is its repeated qualification of the oft-stated intention to replace topsoil to a depth of 12 inches on all reclaimed areas. A number of times the EIR suggests that there may not be sufficient topsoil available to provide 12 inches of cover. See, e.g., 4-19, 4-20, 4-23. Indeed, a fallback position of a mere 8 inches of topsoil replacement is offered in the event that there is a dearth of stockpiled topsoil. 4-23. What is particularly disturbing about the EIR's hedging on this issue is that analyses of other impacts of the proposed action, most notably on vegetation, specifically assume that "sufficient growth media will be available to cover all areas to be reclaimed to a depth of 12 inches." 4-23 ("Assumptions" upon which analysis of "Plant Community Impact" were based).

To address this problem adequately, a revised EIR should contain critical information entirely lacking in the Draft EIR: a quantitative evaluation of the likelihood that topsoil resources would be insufficient to allow a reclamation standard of 12-inch soil depth and an analysis of the impact of the 8-inch fallback depth on the success of revegetation and, consequently, on wildlife, soil erosion, and other resource issues affected by the success of revegetation.

19-14-2

19-14

III. WILDLIFE

Before turning to problems with the EIR's treatment of the proposed action's effects on various specific wildlife species and groups, it is important to note that the mining project would eliminate approximately 530 acres from an existing California Game Refuge. 4-111. Aside from the mere acknowledgment of this fact, the EIR offers no discussion whatsoever of the impacts of this loss of area -- or of the proposed action generally -- on the Refuge as a whole and on its management. Neither is any mitigation of this loss of Game Refuge land provided. Has the California Department of Fish and Game been consulted about this? If it was, the results of those consultations should be set forth in the EIR; if not, the Department should be contacted immediately. These very serious omissions must be corrected in a revised EIR.

A. Terrestrial Wildlife

1. Sage grouse

The proposed project site contains the habitat of at least 32 sage grouse, including the two leks upon which their reproduction depends. 4-36. The sage grouse is a California Species of Special Concern, with a declining population, and is listed as a sensitive species by both the BLM and the Forest Service. 3-32. The project would entail the loss of both leks, of 355 acres of the grouse's low sagebrush summer range and associated nesting areas, and of 35 acres of native grassland necessary to the raising of their young. 4-36. This population is of particular biological and genetic interest because it is an isolated population at the westernmost limit of the species's range. *Id.* Nonetheless, the proposed action would bury one lek under the tailings impoundment,

19-15-1

Section 3.9.1.4 discusses management status of the State Game Refuge. Chapter 6 discusses the cooperative effort between agencies. Table 6.1.1 from the scoping document lists the State Refuge as a possible issue. CDFG has been a cooperating agency (at most SC meetings since February 1990, and received all administrative drafts) since the NOI in October of 1989. The 530 acres represents 1.2% of total State game refuge area. CDFG and the Applicant, LGMI, have developed a Wildlife and Habitat Mitigation and Management Plan (HMMP). A Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4-4.2.5.5, and tables have been revised to reflect the contents of the plan.

The State Game Refuge land is not lost or eliminated, the land use will change during the mine life, the land will remain State Game refuge during and post-mining. The original intent of the State Game refuges was to prohibit hunting, this intent will still be carried out.

19-15-2

Only 20 grouse were observed in April 1991. Sage grouse was listed incorrectly as a sensitive species for USFS and BLM. It is a MIS species for the USFS, the BLM has no official status for the bird.

The passive relocation plan will be carried out for two more seasons, before the heap leach pad covers the pond lek. Counts will be done in July and August of 1991 to check on breeding success. A winter count will be conducted in February 1992 to check on wintering resident or migratory population. An 18 acre created wetlands will provide herbaceous forage, 355 acres of low sage will be enhanced by grazing management. The Mitigation Plan states that if the sage grouse plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Section 4.2.5.4 has been revised to reflect specific mitigation measures. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

19-15-2

the other under the heap leach pad, and destroy the duripan soil upon which the grouse's summer habitat depends. *Id.*

The mitigation that the EIR offers for the proposed action's significant adverse impact upon the sage grouse population -- a high risk of extirpation -- is extremely speculative, despite the impression that the authors of the document appear to wish to present. In short, the proposed mitigation is to attract young male grouse to new leks "created" in areas not affected by the mining. 4-43. This type of mitigation, the reader is informed, has been successful once. 4-44.

An appendix to the EIR describes the proposed creation of, and attraction of males to, the new leks in somewhat more detail. App. G, last 4 pp. However, this document, entitled "Proposed Sage Grouse Mitigation," still does not offer sufficient details for the reader to judge the likely effectiveness of the measures proposed. It offers no indication of the failure rate of previous attempts at such "passive relocation," as the mitigation program is called, or of the nature of the one "successful" previous implementation. This omission is especially worrisome given the mitigation plan's own criteria for success of a created lek: "repeated attendance...by 1-5 young cocks and confirmed breeding of 1-10 hens." Proposed Sage Grouse Mitigation, p. 2. The program to lure cocks to the new lek would continue for at least one more year after success is achieved. *Id.* Taken at face value, these provisions mean that a "new lek" could be declared a success if one young cock responded to the lures and bred with a single hen, and the lure program could then be called off after a second year. In this light, the proposed mitigation is scarcely reassuring. The mitigation plan ends with a cryptic and

1986-2

The Agency wildlife biologist have revised criteria for extirpation to read that if less than 3 displaying males are at the new lek or other leks that may arise in the vicinity, for 3 consecutive years.

This particular method has been successful once. Other similar methods have been successful in the Great Plains and Great Basin. Dr. Eng is a well known and respected grouse expert in the west. Also please see response 19-15-2.

ominous sentence: "Extirpation will require negotiations between LGMI and concerned parties." What exactly does this anticipate?

The final disturbing admission about the proposed grouse "mitigation" comes in

Appendix I, where, in a very brief summary of the likely effectiveness of various wildlife mitigation measures, the EIR further undercuts the likelihood of success of "passive relocation" by noting not only that this method has been successful only once, but adding that "continued attraction of new males may be needed annually." I-13. A revised EIR on the proposed action must fully reveal the severe limitations of the proposed grouse mitigation, discuss its incredibly low threshold of "success," fully reveal the effects of extirpation of this population on the species elsewhere in California and the West, and offer other mitigation measures more likely to protect the Hayden Hill sage grouse population.

19-17-3

2. Mule deer and pronghorn antelope

The EIR notes that the proposed action, in addition to destroying several hundred acres of existing habitat for both mule deer and pronghorn antelope, might disrupt the seasonal migration of both species in the larger region surrounding the project site. 4-36-37. A revised EIR should investigate this issue as to both species, assess the potential impacts of the proposed action on regional populations of each if any such disruption would occur, and propose and evaluate measures to mitigate any significant impacts identified.

3. Golden eagles and prairie falcons

According to the Draft EIR, the proposed action would destroy known nesting

19-17-2

Appendix I in the Draft, Wildlife Impact Analysis Approach was the first step - an early draft conceptual mitigation plan. What appears in Chapter 4 of the FEIS is the proposed mitigation. The Impact Analysis Approach was only included in the Draft as an informational supplement to show the process the specialists went through in defining impacts and mitigation needs. The analysis was the result of a meeting between wildlife biologists discussing impacts. The Analysis Approach was never intended to provide a comprehensive final mitigation plan, but just a starting point. It has been deleted from the FEIS (it no longer serves any purpose) and has been replaced by the Habitat Mitigation Plan in Appendix I.

19-17-3

The goal for both mule deer and pronghorn is to maintain overall migration patterns through the area, during and after the life of the mine. If severe problems develop in deer or pronghorn movement, mitigative measures will be determined between CDFG and LGMI. Monitoring will take place through annual aerial and ground counts. The impacts and mitigation Sections 4.2.5.2 and 4.2.5.4 have been updated with this information. The Habitat Mitigation Plan, located in Appendix I, specifies the mitigation measures for mule deer and pronghorn.

Habitat improvements for pronghorn include enhancement and grazing management on 355 acres of low sage habitat, and this created wetland will replace lost forage.

Habitat improvements for mule deer include 1,500 of shrub habitat improvement.

- 19-18-1 The golden eagle nest will not be destroyed, it is near the access road but not in its path. The main impact to eagles is the loss of 400 acres of foraging habitat. Golden eagle foraging ranges are generally several square miles (4-10). The created wetlands will increase forb production for the area and therefore will increase the small mammal (rabbits and rodents) which will replace some of that food supply. We feel the main impact to the prairie falcon is the loss of 400 acres of the foraging base. A pair was observed in the summer of 1990 but have not been observed in 1991. At closure, abandoned pit walls will be modified to be attractive to nesting raptors. Suitable nesting potholes will be created post-mining in the pit wall for prairie falcons.
- 19-18-3 Water fowl observed nesting in the pond were mallard, pintail, and green-winged teal. Other water associated birds visited the stock pond. (Bio-Resources, 1990e) The stock pond is not considered important habitat for water associated birds due to the proximity of much larger and more attractive bodies of water a little over a mile from the Project area. (i.e. Silva Flat, Dillon Lake and Snyder Waterhole). CDFG and LGMI have developed a Wildlife Habitat Mitigation and Management Plan and Wetlands Mitigation Plan located in Appendix 1. The plan states that approximately 18.5 acres of self-sustaining wetlands will be created, this will replace the lost habitat. The impacts and mitigation Sections for wetlands and riparian habitats have been revised to reflect the contents of the Wildlife and Wetlands Mitigation Plans both located in Appendix 1.

9-18-1 sites of two raptor species, the golden eagle and the prairie falcon, that are California species of special concern and BLM- and Forest Service-listed sensitive species. 4-37, 3-32. No mitigation is proposed for the loss of the golden eagle nest site, and the only mitigation suggested for the destruction of the falcon site is a passive one, potential nesting use of the pit walls after the mine is closed. Given that the pit would be designed with 45-degree slopes, it is not at all clear that the abandoned pit wall would present suitable falcon nest sites. 2-6. In general, the use of mine pit walls by raptors for nest sites is unproven.

The lack of active mitigation for the loss of habitat for these two species is justified in the EIR by the statement that neither species is "declining regionally or locally." 4-40. But the very reason these raptors are species of special concern is because of their limited populations in California and the fear that these could decline. It runs counter to these birds' special status to hold that because they are not presently declining, mitigation measures need not be taken to counter habitat destruction that could lead to their decline. A revised EIR should propose measures to ensure that alternative nest sites are available.

4. Riparian and wetlands species

The EIR acknowledges that wetlands and riparian habitats are "very important to wildlife." 4-38. However, despite this recognition and the further admission that the proposed action would destroy 6.55 acres of open water and 80 lineal feet of perennial stream channel and disturb 1,315 lineal feet of intermittent stream channel, nowhere does the EIR specify the "water associated birds" that would lose nesting habitat, or other

- 19-19-1 Reptiles observed in the Project area are listed in Bio-Resources report dated October 1990, and have been added to the species list in Appendix G of the FEIS. No amphibians were observed in the Project Area. The species list in Appendix G also notes what habitat(s) the species was observed using, i.e. Pond/Meadow.
- 19-19-2 Impacts to wildlife due to noise are not considered significant due to the technical information available as well as information available from other similar operations and agencies that monitor them, such as the Nevada Department of Wildlife. Ambient noise level measurements were recorded near the Willow Creek Campground (please see Section 3.14.1) located east of the Project site. The average noise level at the measurement site due to ambient noise sources was 47 dB. The anticipated average noise levels produced by daytime mine operations would generally be less than 40 dB beyond the Project boundary, as shown on Figure 4.14-1. A noise level of 40 dB is roughly equivalent to soft music (see Figure 3.14-1). Beyond the Project boundary, the noise level would attenuate to a noise level subjectively described as faint to very faint. Therefore, operational noise levels resulting from blasting, machinery, and other mine operations is anticipated to have no measurable adverse impact on wildlife beyond the boundaries of the Project. Section 4.2.14.2 has been revised to address these concerns (notably the potential of noise impacts on wildlife). The Sections on noise, 3.14 and 4.2.14, have also been updated with more information.

19-19-1 wildlife species particularly dependent upon wetlands that would be harmed by these losses. *Id.* Indeed, the EIR acknowledges that no biological survey was even done to determine what reptiles and amphibians might inhabit the open water habitats in the project area. 3-30. These significant omissions concerning the fauna of an important habitat type must be corrected in a revised EIR.

5. Noise impacts

19-19-2 The EIR makes an illogical leap in its analysis of the potential impacts of noise -- from blasting, ore crushing, heavy equipment operation, and the like -- on wildlife. The document admits that "there is no conclusive information regarding the effects of noise[,] such as blasting, on wildlife." 4-35. This notwithstanding, the EIR goes on to rely on a consultant's literature search that surveyed the admittedly inconclusive research on the effects of noise on wildlife and remarkably concluded, based on that research, that noise from blasting (and presumably other noise from the project) "is not expected to have a significant adverse effect on wildlife." *Id.*

This wholly unwarranted conclusion is even more troublesome in light of one of the studies considered, which found that "several species of ducks and long-billed dowitchers were sensitive to low-level [airplane] overflights." 4-133. Given the presence of important waterfowl resting, feeding, and breeding areas to the south and southwest of the project site (3-94), these findings should raise concerns about the possible adverse impacts of noise on wildlife in the area, rather than serve as a springboard for an illogical leap to the opposite conclusion. A revised EIR must fairly re-examine the potential impacts of noise on waterfowl and other wildlife species in and around the project area.

B. Aquatic Wildlife -- the Modoc Sucker

One federally-listed endangered species may well be present in the area likely to be affected by the proposed action. This is the Modoc sucker, *Catostomus microps*. The authors of the EIR seem to strain in their efforts to suggest that this species no longer exists in the Willow Creek drainage, if it ever did. The EIR states that the drainage "is believed to be historic habitat for the Modoc sucker" (emphasis added), and embraces as if it were proven fact the theory of one ichthyologist that pure Modoc suckers may have been eliminated from Willow Creek through hybridization with another species. 3-37.

After giving this biased slant in the introductory paragraph of its discussion of the sucker, the EIR goes on to state that California Department of Fish and Game and U.S. Forest Service surveys in 1977 and 1979 found Modoc and hybrid suckers in Willow Creek in the vicinity of Willow Creek campground. 3-38. Why then does the earlier paragraph suggest that there is some uncertainty whether Willow Creek is "historic habitat" for the Modoc sucker? Further, the EIR acknowledges that Willow Creek is "considered a viable option as a site for recovery and expansion of Modoc sucker distribution through an action plan enacted in 1984 and approved by the CDFG, the Modoc National Forest...and the USFWS." *Id.*

Despite the EIR's attempts to wish the Modoc sucker away, it is obvious that whatever specimens of this rare species may be present in Willow Creek and its tributaries must be protected under the Endangered Species Act from the harmful impacts of soil erosion, toxic spills on the project site and on roads along the watershed, other road runoff, water depletion, and any other threats that the project may pose to

- 19-21-1 Willow Creek is a potential recovery site, it is not identified as Critical Habitat. The Biological Assessment indicates that Willow Creek riparian habitat will be improved as a result of the Applicants grazing management along Willow Creek.
- 19-21-2 Formal consultation was initiated by the BLM in July 1991, with a Biological Assessment, Case No. 1-1-91-SP-664, Chapter 6.0 on consultation, wildlife Sections 3.5.3, 4.2.5.2 through 4.2.5.4 have been updated to include results of consultation with USFWS. The Biological Opinion is located in Appendix N. The Biological Assessment is on file with the USFS, BLM and the County. The Emergency Response Plan is included in Appendix L with the SPCC plan.

the Willow Creek drainage. Further, whether the sucker is currently present or not, because Willow Creek has been identified as appropriate habitat for recovery and expansion of this endangered species's range, any action that would render the watershed unfit for such recovery and expansion purposes would have a significant adverse environmental impact on that basis alone.

Yet even after grudgingly concluding that analysis of the project's impacts must proceed "under the assumption that Modoc sucker are present," the EIR concludes from this assumption only that "informal" consultation with the U.S. Fish and Wildlife Service "may" be necessary. 3-38. If an endangered species is assumed to be present -- and that certainly is a wise assumption when the Modoc sucker was found in Willow Creek as recently as 1979 -- in the area of a project likely to affect its habitat adversely, then formal Section 7 consultation with the Fish and Wildlife Service is essential and must be conducted before any final action is approved. The Section 7 biological opinion must be included in the revised draft EIR to ensure that this expert opinion on the project's potential impacts on the endangered Modoc sucker is fully revealed to and reviewed by the decisionmakers and public alike.

Finally, as a mitigation measure to protect the Modoc sucker and other aquatic wildlife and habitat from toxic spills, an "emergency field procedures manual" will be prepared, reviewed by state and federal wildlife agencies and the Forest Service, and its procedures rehearsed in the field. 4-47-48. This manual, along with any other mitigation measures necessary to protect the Modoc sucker, should be promulgated well before the approval of the project and described and analyzed in detail in a revised draft EIR.

IV. WATER

A. Water Quality

The proposed mining at Hayden Hill would require the use of cyanide and a variety of other toxic chemicals in the extraction process and other activities. Mining and processing of both ore and waste rock may release additional harmful substances. In particular, the waste rock and tailings from the mining may produce acid rock drainage and other harmful leachates. All of these are sources of potential contamination to surface waters and groundwater. In this section of our comments, we will address the EIR's treatment of the proposed action's effects on water quality in the project area.

1. Acid rock drainage

A common adverse impact of hardrock mining is the production of acid rock drainage (ARD). The potential exists for the waste rock dump of the proposed mine to produce ARD, which would pose a threat to both surface waters and groundwater in the project area. While the EIR portrays the potential for ARD from the rock excavated at Hayden Hill as low -- e.g., 2-9 -- an examination of the EIR's discussion of this issue demonstrates that insufficient data have been studied to conclude that there would be no significant effects from ARD.

For example, the EIR cites "a wide variation in total sulfur content" in waste rock samples. 4-51. The samples tested are probably "not statistically representative of the actual sulfur content of the waste rock." 4-55. The results of humidity cell tests "may not represent the overall acid generation potential of the waste rock." *Id.* Several samples showed a "net acid generating potential," and the humidity cell tests indicated "low acid

19-23-2

The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County in December of 1990, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.

19-23-3

In regard to the alternative of using thiourea in place of cyanide for leaching the heap, see Section 2.3.3.3 Lixiviant-Alternative. Thiourea is listed as a carcinogen. Laboratory studies (the use of thiourea as a lixiviant for heap leaching is unproven technology for the mining industry) indicate that the recovery of metals with thiourea use may be as good as cyanide in many cases. However, metal recovery is dependent on the characteristics of the ore. The Hayden Hill ores contain significant quantities of clays. Clays adsorb thiourea causing greater reagent consumption and cost and lower metal recovery.

Thiourea leaching must be done under acid conditions, and thiourea consumptions are about double those of cyanide. Additional deliveries of acid and thiourea by truck would be necessary, increasing energy consumption and impacts to transportation and air quality. In addition, the extra truck deliveries would increase the chance of a toxic spill in route to the mine site.

Increased environmental impacts, unproven technology, lower metal recovery and its toxicity make the use of thiourea at Hayden Hill undesirable.

In regard to the effects of cyanide, see Section 2.2.8.13 Sodium Cyanide, for a discussion of concerns related to the use of cyanide as a lixiviant for heap leaching. Much of the information in Section 2.2.8.13 was condensed from the United States General Accounting Office's Report to the Chairman, Subcommittee on Mining and Natural Resources, Committee on Interior and Insular Affairs, House of Representatives (US GAO 1991).

neutralizing potential." *Id.* What all of this boils down to is an admission that no one presently knows what the potential is for ARD from the waste rock dump. The EIR's response, however, is not to call for further investigation prior to project approval but rather to suggest that the acid generating potential of waste rock be studied during mining operations and prior to dumping. 4-55-57.

As mitigation, the EIR requires the preparation of a waste rock monitoring plan to be presented to the Central Valley Regional Water Quality Control Board and a contingency plan "outlining the mitigation and operational procedures to be followed if acid generating waste is produced or heavy metals are leached." Both of these plans should be promulgated immediately and their conditions and effectiveness thoroughly explored in a revised EIR on the project.

2. Cyanide

Both the heap leach and mill operations at the proposed mine will use substantial quantities of cyanide, a highly toxic complex of chemicals. 2-13-22. Nowhere in the EIR is any alternative to the use of cyanide seriously considered. The Mining Waste Study Team of the University of California at Berkeley, in a July 1988 study, suggested that a chemical called thiourea was a potential alternative: "[A]lthough listed as a carcinogen under Proposition 65, [thiourea] is less acutely toxic than cyanide. Reportedly, the recovery of gold is almost as good with thiourea as it is with cyanide." P. xx. This report also states that "recent evidence from the field suggests that cyanide is more persistent than is predicted by current models." P. xxi.

Despite this, the Draft EIR does not consider the alternative of using thiourea, or

any other method than cyanide leaching, to extract gold and does not forthrightly reveal the questions that exist about the safety, both long- and short-term, of using cyanide. In fact, it remains an open question whether even quite low concentrations of cyanide are harmful. A revised EIR should thoroughly examine the current knowledge about the toxicity of cyanide at low levels of solution.

19-24-2 Given the admitted dangers of cyanide use, the proposed action does call for double lining and a leachate collection and recovery system for the heap leach pad and the solution ponds. 2-15-17. However, provision for a response should leakage or other system failure occur is left to a contingency plan yet to be prepared. As with all such plans that would comprise critical parts of adequate mitigation for the project if it is approved, this contingency plan to prevent cyanide solution from entering the environment must be formulated prior to project approval and subjected to full CEQA and NEPA analysis.

On a related, more general note, the EIR should contain a thorough discussion of the impacts of the failure of any containment system holding toxic chemicals, of toxic spills outside containment areas, of the measures that would be employed to respond to such failures and spills, and of the likely effectiveness of such measures. As it stands, the EIR leaves far too much of this critical information to various contingency plans to be prepared at unspecified future dates, outside the public process demanded by NEPA and CEQA.

We will return to the subject of cyanide and the particular threat its presence in open ponds poses to wildlife in our discussion of the alternatives dealing with cyanide

- 19-25-1 Engineered design features and operational strategies of the tailings impoundment eliminate the need for a double lined system. Tailings will be monitored daily and the CRWQCB will be kept up to date on test results.
- 19-25-3 Design features such as liner containment and leak detection and collection systems will minimize the potential for surface or ground water contamination.
- If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection or water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDRs) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the Regional Board at public hearings. The general public may review these documents and provide comments prior to their adoption.
- LGMI will also rely on the Spill Prevention and control Countermeasure Plan (SPCC) (Appendix L) and the Emergency Response Plan (ERP) (Appendix L) to effectively respond to possible threats of surface and ground water contamination.
- This provides three measures of protection and response to intercept possible contaminants before entering ground or surface water.

solution containment, below.

3. Leachate from tailings impoundment

The EIR notes that the tailings, like the waste rock, have the potential to produce ARD. 2-25. The tailings will also contain a low concentration of cyanide. *Id.* Further, other potential impacts include "leaching of heavy metals, lowering of pH, and the precipitation of gypsum in the tailings, thereby changing the physical and chemical characteristics of the tailings." 4-57 Such changes could affect the behavior of the tailings and render original design assumptions obsolete. *Id.*

Once again, the mitigation proposed for these risks from the tailings impoundment is future preparation of a contingency plan. Once again, NEPA and CEQA demand that such a plan be formulated prior to project approval and examined in the EIR/EIS. We also strongly urge that the tailings impoundment should have a double lining like the heap leach pad and the solution ponds; it is only designed to have a single lining in the proposed action. 2-23.

4. Groundwater contamination

While LGMI has committed to monitoring of groundwater quality throughout the life of the project, nowhere in the EIR is any response to the discovery of groundwater contamination from project activities discussed. 4-65. Further, the possibility exists that groundwater could be contaminated after mine closure by leachate from the waste rock dump, tailings impoundment, or heap leach pad. Groundwater at the site is currently "of good quality, suitable for drinking." 3-47. A revised EIR must realistically assess the possibility of groundwater contamination, the likely severity of such an impact, measures

to mitigate this threat, and the effectiveness of such measures.

B. Water Quantity

1. Deep aquifers

The proposed action would draw groundwater from two sources, the chief source a deep aquifer near Bunselmeier Spring and the backup source a deep aquifer beneath Preston Canyon. 2-31. The EIR estimates the saturated thickness of the Bunselmeier deep aquifer to be 400 feet, conservatively estimated, and that of the Preston deep aquifer to be greater than 300 feet. 3-43, 3-45. The EIR acknowledges that several hydraulic parameters -- hydraulic gradient, hydraulic conductivity, and porosity -- used in evaluating both aquifers were estimates "not determined through specific laboratory or field tests." 3-45.

The project would draw upon these sources at the average total rate of 1,000 gallons per minute. 2-31. The analysis of the project's impact on the aquifers assumed that this amount would be pumped from each over a seven-year period (though the actual life of the proposed mine is closer to eight years). 4-57. The computer modeling used predicted that the drawdown after seven years on the Bunselmeier aquifer would be 78 feet at the well and less than 58 feet at distances greater than two miles. 4-58. At the Preston aquifer, the model predicted a 23-foot drawdown at the well and less than six feet at distances greater than two miles. *Id.* After considering estimated recharge to the two aquifers, the EIR concludes (rather surprisingly) that the Bunselmeier aquifer would recharge in this semi-arid region at a higher rate than water would be withdrawn and that the Preston aquifer would lose 400 to 600 acre feet of water a year. 4-59.

Given these optimistic assumptions, it is not surprising to find that the EIR has little to offer in the way of mitigation in the event that the pumping has a more significant adverse impact on regional groundwater levels than the computer forecasts. In sum, the mitigation proposed is that, if monitoring reveals that the drawdown at either aquifer exceeds the amount predicted in the computer modeling, "prior modeling of the well field shall be reevaluated using aquifer properties and drawdown data collected from the actual pumped wells to ensure that predictions of no noticeable affect [sic] to the groundwater remain valid." 4-62. In plain English, the mitigation proposal for potential groundwater depletion is that, if it turns out that groundwater is drawn down more than has been predicted, the responsible agencies will have to figure out what to do at that time. This is hardly sufficient mitigation for a potentially very serious impact, and a revised EIR must seriously discuss the potential impacts of groundwater depletion if the optimistic assumptions prove incorrect and examine concrete mitigation measures to address such impacts.

2. Shallow aquifers

The EIR asserts that no serious impacts to shallow perched aquifers would result from the proposed action. 4-59-60. Excavation of the pit would be likely to destroy small springs and seeps in the immediate vicinity and might, through interruption of the local perched aquifer recharge area, affect springs and seeps farther away, such as Bunselmeier Spring, but the EIR concludes that such impacts would not be significant. 4-60. However, the admission that the excavated pit could interrupt the perched aquifer recharge area raises serious questions for the waterfowl preserves to the south and

Groundwater depletion is not a probable or realistic impact of the proposed Project. The hydrogeologic performance of the deep aquifer basin was evaluated utilizing extremely conservative recharge and storage parameters. Expected drawdown is slight in a regional sense. Also, by using a well field extraction system, drawdown is spread out over the basin, thereby minimizing significant drawdown in one spot. Natural water table fluctuations can be as much as 20 to 30 feet.

Silva Flat Reservoir is a man-made impoundment which captures and impounds surface water runoff. Dillon Lake occupies a shallow natural basin which also captures and impounds surface water runoff from upgradient catchment areas. Water levels in each water body are likely inter-related due to the elevated groundwater levels caused by Silva Flat Reservoir and the geomorphology of the Silva Flat basin.

The bottom of the pit will be approximately 200-feet below the maximum water surface level of both water bodies. The observed potentiometric (water) surface is 300-feet below the pit bottom. Moreover, the potentiometric gradient trends to the northwest (see Figure 3.6-1). Thus the available data indicates that pit operations would have no effect on groundwater conditions which could influence Silva Flat Reservoir or Dillon Lake.

19-28-2

The Applicant has committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project to return these re-routed waters to the subsurface. This action will be considered infeasible if only very low flows are expected, if results of rerouting would not prove beneficial and/or if technically infeasible.

In addition, a mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4.

southwest. A revised EIR should identify the sources of water for both Dillon Lake and Silva Flat Reservoir and discuss the likelihood that the effects of the pit on the shallow aquifer might also adversely affect these areas.

19-28-3

On a related note, one mitigation measure that the EIR provides is that the applicant will reroute seeps and springs, "to the extent feasible," intercepted by the construction of ore processing facilities. 4-65. The qualifying phrase leaves the applicant a very easy way out of implementing this mitigation. Specific standards for a determination of "infeasibility" should be made a part of this mitigation.

V. LAND USE

19-28-3

The proposed action would lead to the loss of 530 acres of a California game refuge, and the project site would encompass 658 acres of private land that are classified as an agricultural preserve pursuant to the Williamson Act. 4-110-11. No mitigation is proposed for the loss of the game refuge lands, nor are the impacts of this loss on the game refuge even analyzed. The sole "mitigation" proposed for the potential loss of the agricultural preserve lands is their declassification as such if Lassen County determines that mining is not a compatible use with their current designation. A revised EIR should examine the impacts of the potential losses of both areas on the broader region the surrounds them and propose measures that would genuinely mitigate those impacts.

VI. RECREATION

A. Hayden Hill Townsite

The EIR's analysis of the proposed project's impacts on recreation suggests that the loss of the unique recreational opportunity to visit the historic mining town of

For discussion of impacts on the game refuge, see Section 4.2.9, Impacts to terrestrial wildlife. See also, the revised habitat management plan included in Appendix I.

As proposed, lands currently within the agricultural preserve are proposed for the following specific mining uses: 15 acres for the mining pit; 131 acres for tailings ponds; 90 acres for heap leach pads; 7 acres for solution ponds; 20 acres for topsoil storage; and 15 acres for a portion of the waste rock dump. The remaining area is between and around the specified uses.

The duration of the disturbance is projected to be eight to ten years for actual mining activity with reclamation activity to follow immediately. Successful reclamation is addressed in the release criteria of the revised Reclamation Plan.

As described in the Draft, the use of these non-prime agricultural preserve lands is grazing and open rangeland. Based on the use of BLM lands in the Project area (512 acres at 57 AUMs), the carrying capacity of the affected Williamson Act lands (658 acres) would be approximately 72 AUMs.

Section 3.9.1.4 discusses management status of the State Game Refuge. Chapter 6 discusses the cooperative effort between agencies. Table 6.1.1 from the scoping document lists the State Refuge as a possible issue. CDFG has been a cooperating agency (at most SC meetings since February 1990, and received all administrative drafts) since the NOI in October of 1989. The 530 acres represents 1.2% of total State game refuge area. CDFG and the Applicant, LGMI, have developed a Wildlife and Habitat Mitigation and Management Plan (HMMP). A Mitigation Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4- 4.2.5.5, and tables have been revised to reflect the contents of the plan.

The State Game Refuge land is not lost or eliminated, the land use will change during the mine life, the land will remain State Game refuge during and post-mining. The original intent of the State Game refuges was to prohibit hunting, this intent will still be carried out.

The discussion on the land use impacts to Williamson Act lands must be read in conjunction with the discussions of impacts on rangeland uses (Section 4.2.9.4), soil (4.2.3), vegetation (4.2.4), and the revised Reclamation Plan.

Rather than debate the compatibility of mining on agricultural preserve lands, the property owner has requested and the County is entertaining cancellation of the Williamson Act contract as it pertains to approximately 658 acres which would be disturbed by mining activities. This is part of an existing 1,932-acre agricultural preserve.

Pursuant to California Government Code, Section 51282, the County proposes to make findings that the cancellation is in the public interest for reasons including local economic and employment factors and the development of unique mineral resources. It can also be noted that conversion of land use from rangeland to the mining of significant gold and silver resources is not, in this situation, likely to result in discontinuous patterns of urban development since the cause for conversion (i.e., the mineral resource) is unique to the site.

19-29-1

The alteration and demolition of the Hayden Hill Mining District as it presently exists, will be unavoidable. However, the historical value of the area will not be lost and the new mining operations will provide a future source of recreation. Loss of the historic town site and mining district, in its current condition, would constitute an irreversible impact to a relatively unique recreation resource in the BLM Planning Area. However, the fragmentary nature of the remains of the town site, limit its current value as a recreational resource. Further, the Project would eliminate and reclaim a number of hazardous remnants of the historic underground workings and above-ground pits. The LGMI operations can become a relatively unique tourist attraction in the area, particularly if guided tours are offered. Guided tours, by arrangement, can serve to offset the change of condition of the historic mining district as a recreation resource.

19-29-2 Please see Section 4.2.5.2-4.2.5.3, Impacts, for detailed discussion of the impacts and mitigation to wildlife.

19-29-1 Hayden Hill will be "offset" by the opportunity for the new mining operations to become "a relatively unique tourist attraction in the area, particularly if guided tours are offered."

4-129-130. Few tourists would be likely (or welcome) to visit a secured mining area unless guided tours were offered. But even if informative tours were made available to the public, these would hardly replace the loss of one of the dwindling number of historic

mining towns in California and elsewhere. There are approximately 15 heap leach operations active in California and over 50 in Nevada. 2-14. How many publicly accessible historic mining sites like the Hayden Hill townsite remain?

B. Wildlife-Related Recreation

19-29-2 In its discussion of the proposed action's impacts on wildlife-related recreation, the

EIR states that effects on this sort of recreation in the project vicinity would be

"expected to disappear completely as successful reclamation occurs after Project

completion." 4-130. Putting aside the lack of assurances that "successful reclamation"

will be achieved, this assertion is directly contradicted by numerous statements in the

EIR. As discussed in our comments on the wildlife impacts of the proposed action in

Part III, above, and elsewhere in these comments, the proposed action would potentially

disrupt the seasonal migration patterns of both mule deer and pronghorn antelope

populations in the area, destroy critical breeding and summer habitat for sage grouse

(whose winter range is in the immediate vicinity of the project site) and perhaps extirpate

the local grouse population, greatly alter the character of all five major vegetation types

on the project site, which presently help support wildlife populations in the vicinity, and

so on and on. A revised draft EIR must accurately analyze the proposed action's

19-30-3 The modification of Hayden Hill by the pit, which would introduce an unnatural landform to the region, is a significant adverse impact. Section 4.2.2 has been revised to include this information and provide more detail concerning topographic impacts.

impacts on wildlife-related reclamation in light of, and not in direct contradiction to, the document's other analyses of wildlife impacts.

VII. VISUAL RESOURCES

That the proposed action will have a significant adverse impact on the visual quality of the project site and surrounding areas is patently obvious to anyone who takes the quickest glance at the before-and-after pictures presented as Figures 4.11-2 and 4.11-3. The latter shows, above, a full view of Hayden Hill from the southwest as it currently exists, a pleasant, natural hill with visible traces of past human activities, and, below, the same view after the completion of mining operations, in which the hill has been taken apart and substantially redistributed across the landscape in the notably artificial forms of tailings impoundment, heap leach pad, waste rock dump, and abandoned mine pit.

19-30-3 Laughably, the EIR attempts to obfuscate this bleak reality by numerous references to the fact that Hayden Hill as it currently exists does not meet "visual quality objectives," as if the minor scars on the present hill's natural form somehow equal the visual blight that the industrially-reconstructed landscape would present. See, e.g., 4-136. In a similar vein, the EIR suggests that revegetation will render the enormous tailings impoundment and heap leach pad "visually subordinate to their surroundings" -- perhaps this would be true if one looked at no more remote "surroundings" than the waste rock dump and abandoned pit behind them. 4-124. (And what does it mean to say, in the section of the EIR discussing impacts to topography, that the dismantling of Hayden Hill "would not adversely impact the topography of this area"? 4-10. Just what would

19-31-2

In regard to the "vague technical jargon", the Project area and surrounding areas were rated for Visual Quality Objectives (VQOs) by the Forest Service using Forest Service criteria. These objectives set specific criteria that management activities must meet in order to maintain an identified landscape quality. It was agreed by the Forest Service, BLM and Lassen County that the Project would be evaluated using the Forest Service Visual Management System (see Section 3.11).

After this evaluation, the Hayden Hill Project site was evaluated for visual impacts and measures were introduced to mitigate these impacts. We determined that the Project will eventually meet the VQOs for the area when reclamation efforts and mitigation measures are successful in establishing landforms, vegetation types and vegetation patterns that are harmonious with the surrounding natural landscape." Please refer to Sections 4.2.11 for more information.

In regard to the current disturbance, please refer to Section 4.2.11.2. "The visual impact of any facility, structure, or disturbance is a function of whether or not it can be seen and how much of a contrast it presents compared to the surrounding area." The current disturbance at the site is a statement of fact regarding the quality of the appearance of the site. The point is that few people will see the site from the south, and that existing views are to previously disturbed areas.

Figure 4.11-2 presents the top of the waste rock dump after one growing season. After complete revegetation, the top of the waste rock dump will blend better with the surrounding landscape.

Figure 4.11-3 presents the mine site after one growing season. The viewpoint is proximate to the mine site, presenting the maximum visual impact. After complete revegetation, the site will appear more natural-looking, and will blend better with the surrounding landscape. This appearance will increase with distance from the site. Again, few people will actually view this area.

19-31-3 Please see revised Section 4.2.12.

comprise an adverse impact on topography, then?) The EIR concludes -- quite logically, if one accepts its risible premises -- that the ugly top of the waste dump, as seen from scenic Highway 139, and the entire gutted hill, as seen from little-traveled roads to the south and west, are not significant visual impacts. 4-126.

This treatment of the visual impacts of the proposed action is an insult to the reader's intelligence. The EIR should straightforwardly acknowledge that the project would alter the existing pastoral landscape of Hayden Hill in a manner that will have significant negative impacts on its visual character as seen from any vantage point. To attempt to hide the obvious in a haze of vague technical jargon about "visual quality objectives" and "visual absorption capability" only undermines the credibility of the EIR in general.

VIII. TRANSPORTATION

The brief discussion of the cumulative impacts that the project would have on transportation in the region surrounding the project site considers only the project's impacts in conjunction with the proposed Lassen College Cogeneration Project at Susanville, about the transportation impacts of which little is presently known. 4-129. Surprisingly, no consideration is given in the analysis of cumulative transportation impacts to the transportation impacts of the proposed California Correctional Center expansion at Susanville. This proposed project is predicted to result in a total population increase in the region of 2,316 people and is discussed extensively in the cumulative impacts section of the socioeconomic impacts analysis. 4-103-105. A revised EIR must consider the cumulative impacts on transportation that the proposed action would have when

19-32-2 The text has been revised to clarify this point. Please see Section 4.2.10.4.
19-32-3 Section 4.2.10.6 has been revised to incorporate the commentor's suggestions.

considered in conjunction with the Correctional Center expansion.

IX. CULTURAL RESOURCES

19-32-2 The very odd thing about the EIR's discussion of the proposed action's impacts on the cultural resources of the Hayden Hill townsite is its entire omission of any direct mention of the central fact that the project would completely destroy the townsite. While this is mentioned elsewhere in the EIR, a reader particularly interested in the townsite who picked up the document and turned to the Cultural Resources section would find that the site would be "adversely impacted" and that, in general, the proposed action would result in the alteration or destruction of unspecified historical sites. 4-116, 4-119. The revised EIR should make clear in this section, where it is of great relevance, that the proposed action would obliterate the remains of the town of Hayden Hill.

19-32-3 We applaud the intention stated in the EIR to notify employees, contractors, and consultants of the illegality of disturbing or collecting cultural artifacts without proper authorization. 4-119. However, the notification proposed to be distributed refers only to "undue and unauthorized impacts to the resources." *Id.* We strongly suggest that this legalese be replaced or supplemented by plain language that explains what these "undue and unauthorized impacts" are, for example, "theft, disturbance, or destruction of historic and prehistoric articles found on or around the site." In its clearer revised form, this notification should also be given to all authorized visitors to the site.

X. SOCIOECONOMICS

A. Schools

Because of the current methods by which schools are financed in California, the

19-33-1 Lassen and Modoc Counties are aware of the proposed Project, and are free to comment and negotiate for impacts directly attributable to the Project.

19-33-2 See response to 1-8-2 above. Impacts must be quantified and attributable to the Project. The EIR/EIS impacts are potential, but not proven.

19-33-1 additional students that the new population induced by the proposed action would bring to school districts around the project site would result in deficits for most of those school districts. 4-87-89. While the EIR reveals this harsh impact on the already financially-strapped districts, the only mitigation that the proposed action includes is that "LGMI and the local governing bodies should proceed with discussions regarding negotiated compensation by LGMI to mitigate this impact." 4-102. Given the tiny portion of LGMI's budget that the school deficits would represent, and the difficulties the districts would doubtless encounter attempting to find these funds elsewhere, the proposed action should include a mandatory mitigation measure that requires LGMI to compensate local schools for the increased financial burden its project would cause them.

B. Modoc County

19-33-2 Even more difficult to comprehend than the EIR's failure to provide an enforceable mitigation measure to address the school deficit problem is its treatment of the deficit that the proposed action would cause Modoc County. Because the project's taxable holdings and activities are in neighboring Lassen County, Modoc County would have to bear the burden of providing services to the estimated 134 new residents that the project would bring into the county without receiving any significant tax revenues from the project to offset its expenditures. 4-98. Over the life of the project, this would lead to an estimated net cost to Modoc county of \$262,000. *Id.* Remarkably, this large fiscal impact on a very small county is not even explicitly recognized as an unavoidable adverse impact of the project. Worse, no mitigation of this impact whatsoever is proposed. 4-102. A revised EIR should recognize the seriousness of the fiscal impact of the project on

Modoc County and propose concrete measures to mitigate this impact.

C. Boom-and-Bust Economy

Nowhere in the socioeconomic impacts discussion is there any treatment of the impacts on the surrounding communities of the termination of the project. LGMI proposes to open an operation that would bring 365 new residents into the area, create new jobs, increase the need for the full range of government services, and infuse new money into the local economy. See generally EIR § 4.2.8, 4-80 ff. Yet in little more than a decade, the mine would be closed. What impacts would this have on employment, government services, housing, and the like? The impacts of this ultimate phase of the mining project must be examined in detail in a revised EIR and mitigation measures proposed for the significant adverse impacts identified.

XI. ALTERNATIVES

The examination of alternatives to a proposed action subject to NEPA has been described as the linch-pin of the entire EIS. *California v. Bergland*, 483 F.Supp. 465 (E.D.Cal. 1980), *aff'd in part, rev'd in part sub nom. California v. Block* (9th Cir. 1982). NEPA and the CEQA regulations require that an EIS/EIR rigorously explore and objectively evaluate all reasonable alternatives to the proposed action. 40 C.F.R. § 1502.14(a). Without such a discussion, the decisionmaker cannot make an informed choice about whether to proceed with the proposed action. Moreover, failure to discuss an adequate range of alternatives prevents compliance with CEQA's requirement that project approval be withheld if there are "feasible alternatives...which would substantially lessen the significant environmental effects of the project." Cal.Pub.Res.C. § 21002.

19-35-1

NEPA regulations require that alternatives which were one time considered but eliminated from detailed analysis be described. The reasons for their having been eliminated should be briefly discussed (40 CFR 1502.14(a)). CEQA guidelines require a description of a range of reasonable alternatives to the project. The range of alternatives required is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice.

All Project alternatives, including those eliminated from detailed analysis, were explored and evaluated by the preparer, the steering committee, and engineers, geologists, and biologists familiar with the project design and geology of the site. Alternatives eliminated from detailed analysis were done so for a variety of reasons, but, in general, because of infeasibility of design, and increase in environmental impact. Economic concerns were also considered if adoption of the alternative would render the Project infeasible.

Section 2.3.3.2 contains a description of the Reduced Project Size Alternative including the reasons why this alternative was eliminated from detailed analysis.

The statement "other means of meeting gold demand" is unclear. It is assumed that it means substituting another commodity for gold, or mining gold on another site in the US or in another country. This would be out of the scope of this EIR/EIS. It is required under CEQA guidelines to "describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project..." (14 CCR 15126(d)). "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (14 CCR 15126(d)(5)). Under NEPA regulations, it is required to indicate how each alternative, with the exception of the no-action alternative, will generally accomplish the purpose and need for action (US BLM 1988).

12-147

In the Draft EIR here, ten alternatives are examined, although several of these -- e.g., the fire tower alternative, the enclosed cyanide systems alternatives -- would more properly be characterized as the proposed action with additional mitigation measures. With the exception of the no action alternative, none of the alternatives considered in depth examines an alternative smaller in scope than the proposed action or alternative means of supplying the gold that the proposed action is predicted to extract. The reader is simply informed that "reduced project size" was rejected as an alternative because it was "economically infeasible." 2-55. No basis whatsoever for this assertion is provided in the EIR. A revised EIR should look at both of these sorts of alternatives -- a smaller project and other means of meeting gold demand -- to the proposed large mining project.

At least one alternative to the proposed action, the complete benching alternative, is acknowledged in the EIR to be more environmentally benign than the proposed action. While this alternative is identified as BLM's and the Forest Service's "preferred alternative," it is not the proposed action. 2-1. Under the CEQA requirement that a project cannot be approved if there is a feasible alternative that would substantially lessen the project's significant environmental effects, the complete benching alternative must be adopted as the proposed action under the EIR's own terms.

In what follows, we examine some of the particular alternatives presented in the Draft EIR and point out various problems with these and the EIR's analysis of them.

A. No Action Alternative

The EIR's examination of the no action alternative perpetuates its clumsy attempts to downplay the significant visual impacts of the proposed action and the

19-35-1

19-35-4

According to NEPA regulations, "The no-action alternative should describe what would occur if the proposed action or other alternatives were not implemented." In cases such as project proposals, no action would mean not allowing the proposed action or any reasonable alternative to be implemented; denying the action (US BLM 1988). According to CEQA guidelines, the no project alternative must describe what condition or program preceded the project.

Chapter 3.0, Description of the Existing Environment, is a description of the components of the human environment including the physical, biological, social and economic resources and conditions that would be affected by the Proposed Action and alternatives. This chapter serves as a baseline showing conditions as they exist prior to the initiation of the Proposed Action or the Project Alternatives (US BLM 1988). In other words, Chapter 3.0 is a description of the human environment preceding the project, or as it would exist if the Proposed Action were denied.

It appears that the commentor is asking for a description of the effects of the Proposed Action on the existing conditions at the Project site. This is contained in Chapter 4.0, Environmental Consequences. Chapter 4.0 is an analysis and discussion of the impacts on the quality of the human environment described in Chapter 3.0 of the Proposed Action and alternatives. It also contains an analysis and description of any mitigation measures which could be implemented to avoid or reduce the projected impacts of the proposed action or alternatives. The effectiveness of the mitigation measures in reducing adverse impacts or enhancing beneficial impacts which remain after mitigation measures have been applied is also identified in this chapter (US BLM 1988). In other words, Chapter 4.0 is a description of the effects of the Proposed Action and alternatives to the current or existing conditions at the Project site. Table I is a summary of these effects.

NEPA regulations and CEQA guidelines both require a summary comparison of the environmental impacts of the proposed action and alternatives (US BLM 1988, and 14 CCR 15126(d)). For a comparison of the adverse effects of the Proposed Action and alternatives, including the No Action Alternative, see Table 4-1-1, Proposed Action and Alternatives Comparative Unavoidable Adverse Impacts. Further discussion is contained in Chapter 4.0.

Pulling the information from these two chapters together into a "no action analysis", as requested by the commentor, would constitute unnecessary duplication and be contrary to the intent of both NEPA and CEQA. We believe the document is adequately indexed and cross referenced to preclude the need for duplication.

difficulties with reclamation that the proposed action would pose. Thus, the comparative analysis of the no action alternative appears to suggest that soil erosion from the site as it exists with its minor disturbances from past activities is as bad, if not worse, than it would be if Hayden Hill were extensively pit mined. 4-134-35. The EIR tells us that an existing 200-acre disturbance to vegetation would not be reclaimed under the no action alternative, implying that a benefit of taking the entire hill apart would be to fix this disturbance. 4-135. We are reminded again that the existing site does not meet "visual quality objectives" for the area, as if there were any comparison between the relatively minor scars there today and the wholesale demolition of Hayden Hill that the proposed action contemplates. 4-136.

A fair comparison of the no action alternative with the proposed action should quantitatively compare the two: How much soil erosion and other damage would occur under the proposed action as compared to no action? How large an area will be unreclaimed -- for example, pit walls and steep slopes -- after the proposed action in comparison to the acreage of existing disturbances? How will the area look after the proposed action as compared to its present appearance? Such matters should be plainly addressed in the analysis of the no action alternative; the reader should not be left to ferret out the true picture from other parts of the EIR, to the extent that the information is given anywhere at all.

B. Pit Backfilling Alternatives

The EIR presents two backfilling alternatives, comprehensive and partial, and attempts to justify their rejection as serious alternatives on economic rather than

19-37-2

It is not necessary for an EIR/EIS to contain this information. The economic considerations relevant to the Comprehensive Backfilled Pit Alternative were included in the impact analysis because "an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision" (40 CFR 1502.23).

environmental grounds. While acknowledging that the backfill alternatives would eliminate or significantly reduce in size the waste rock dump, the EIR points to their adverse impact on "future mining potential" as a reason to reject these alternatives. 4-139. But BLM, the Forest Service, and Lassen County are under no statutory duty to maximize "future mining potential," while they are under a variety of legal duties -- under SMARA, CEQA, and NEPA, for example -- to protect the environment from the adverse effects of mining. Nonetheless, protection of future mining potential is the only justification tendered for the rejection of the partial backfilling alternative. 4-144-45. At the same time, the EIR grudgingly acknowledges that this alternative would have positive benefits for reclamation and visual impacts. *Id.*

19-37-2 The EIR additionally seeks to justify its rejection of the comprehensive backfilling alternative on the basis that the backfilling itself would be too costly. 4-138. This alternative would add \$64.3 million to the cost of the project, we are told. *Id.* Oddly, the EIR makes this assertion about the cost of backfilling without providing the critical information that would allow the reviewer to judge whether that cost is a sufficient reason to reject the alternative. In order to decide whether or not comprehensive backfilling is economically feasible, one must have some idea of what the resources of the proposed mine are worth. While the 1989 Plan of Operations for the Hayden Hill mine reveals that the mine would have a capital start-up cost of \$72 million and an annual operating cost of \$36 million (Plan of Operations, p. 22), nowhere in that document, the EIR, or the Draft Resource Plan is the estimated value of the mine as proposed given, either on an annual basis or over the life of the operation. The reader of the EIR is thus

expected to take on faith the assertion that comprehensive backfilling -- and a number of other environmentally beneficial alternatives to and mitigations for the proposed action -- are economically infeasible. This is unacceptable, and a revised EIR should provide some basis for comparison of the costs assigned various, admittedly environmentally-preferable alternatives and mitigations to the value of the mine to LGMI.

19-38-2 On a related note, insofar as part of the proposed mining operations would be conducted on federal lands managed by the BLM, these are governed by the Mining Law of 1872, which provides that, if a "valuable mineral deposit" is found, the prospector may stake a claim, mine, and remove the deposit. 30 U.S.C. § 22. The determination of whether the statutorily-required "valuable" deposit exists depends on the costs of mining it, in full compliance with applicable environmental laws, including those requiring successful reclamation. In fact, BLM's California Instruction Manual No. CA-89-55 requires EISs on proposed hard-rock mining operations to "have a section that estimates acres disturbed and costs of reclamation" for a series of specific categories of reclamation activities. These categories include reclamation costs for: roads, open pits, rock waste piles, leach pads and drainage ditches, cyanide pregnant ponds, tailings ponds, buildings and pads, conveyor belts, and other rights of way. Though BLM is one of the lead agencies for the Draft EIR, none of these specific reclamation cost data are presented in the EIR. The revised draft EIR must fulfil this obligation under BLM's own procedures.

Only if the mining company can show that the proposed project is likely to make a profit after all legitimate costs are considered does a valuable claim exist. See, e.g.,

19-39-2

It is normal CEQA and NEPA procedure to identify and evaluate reasonable alternatives to the Proposed Action during the EIR/EIS process. The Lead Agency uses this information to choose preferred alternatives which are identified in the EIR/EIS and make them a Condition of Approval. Also at that time, the NEPA Record of Decision is made, and, during the process of approval of permits and licenses, the federal agencies specify which alternative(s) and conditions are necessary for the Project. The EIR/EIS is an informational, public disclosure document to assist the agencies in evaluating the project. Although this alternative is not a part of the Proposed Action, it may become a condition of Project approval in the Conditions of Approval and Record of Decision. Please refer to Section 2.1.

United States v. Coleman, 390 U.S. 599 (1968). Obviously, along with the anticipated costs of operations, environmental protection, and successful reclamation, the predicted value of the resource to be mined is a critical factor in this calculation. Again, a revised EIR should reveal the value predicted for the gold resource at Hayden Hill and should further reveal the methodology employed in arriving at the conclusion that a valuable deposit exists.

C. Complete Benching Alternative

According to the Draft EIR, the complete benching alternative, in comparison to the proposed action, would produce greater slope stability for the waste rock dump, produce less soil erosion, have a smaller adverse impact on water quality, and allow more reclamation. 4-146-47. Curiously, this alternative is identified as the BLM's and the Forest Service's preferred alternative, although it is not a part of the proposed action. 2-1. It is unclear just what this means. Does Lassen County have some objection to this alternative?

The only negative aspect of the complete benching alternative compared to the proposed action is that the former would destroy an additional 21 acres of Jeffrey pine - mountain shrub and upland shrub vegetation types. 4-147. On the other hand, it would allow an additional 20 acres of reclamation. *Id.* Though the EIR terms the habitat lost "important" -- and we certainly do not dispute the importance of any wildlife habitat in the project area -- this additional acreage loss is quite modest when viewed in the context of the 296 acres of Jeffrey pine - mountain shrub habitat and the 244 acres of upland shrub that the proposed action would destroy. 4-24-25.

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Since this alternative has been identified as a preferred alternative, it is likely it will become a condition of Project approval.

19-40-2

NEPA requires that alternatives which were one time considered but eliminated from detailed analysis be described. The reasons for their having been eliminated should be briefly discussed (40 CFR 1502.14a). CEQA requires a description of a range of reasonable alternatives to the project. The range of alternatives required is governed by "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (14 CCR 15126(d)).

All project alternatives, including those eliminated from detailed analysis, were explored and evaluated by the preparer, the steering committee, and engineers, geologists, and biologists familiar with the Project design and geology of the site. Alternatives eliminated from detailed analysis were done so for a variety of reasons, but, in general, because of infeasibility of design and increase in environmental impact. The locations of all facilities associated with the Project have been chosen to minimize the area to be disturbed, avoid known cultural and historic resources, reduce potential energy consumption and equipment use through reduced transport distances, and to maximize efficiency and economics.

Component location alternatives analyzed but eliminated from detailed study include a different location for the pit, two locations for the waste rock dump, 14 different locations for the tailings impoundment, off-site processing, and 5 different locations for facilities arrangements. Reasons for elimination are described briefly in Section 2.3.3.1. They are summarized in Tables 2.3-2 (all) and 2.3-3 (tailings impoundment).

Facilities Location Alternative 3 was considered to be the most feasible, logistically compelling, environmentally conscious, and functional alternative of the five facilities arrangements analyzed. The Facilities Location Alternatives 1 and 2 were eliminated from further consideration due to surface and subsurface conditions which make these areas unsuitable for construction and containment. These arrangements would also adversely impact Snyder Waterhole. Haul distances and total disturbance area would increase, resulting in increased energy consumption and adverse environmental impacts.

Facilities Location Alternatives 4 and 5 were re-configurations of the heap leach pad to avoid wetland areas. The additional height of the heap necessary for these alternatives would result in increased visual impacts and difficulty for reclamation. These designs also would present more difficulty for logistics and operations. Additionally, such an arrangement does not truly avoid wetlands impacts as the wetlands would be isolated and bounded by the heap. Few, if any, wetland values would remain.

The Draft Reclamation Plan in Appendix E of the EIR states that waste rock

dumps are "difficult to re-vegetate under the best of environmental conditions." E-25-26.

As the EIR makes clear, the complete benching alternative, by stabilizing the waste rock dump and providing the maximum area of reclaimable benches, would provide the best chances to succeed at the difficult task of reclaiming the dump. As a feasible mitigation measure that would substantially lessen significant adverse impacts of the proposed action, the complete benching alternative must be adopted.

D. Facilities Location Alternative

The single alternative considered in any depth that would relocate mining facilities to protect environmental values seems to have been created in order to be rejected.

So-called "facilities location alternative 3" purports to be designed to preserve a stock pond and a sage grouse lek near the pond's south shore. 4-154. Yet the EIR concedes that the alternative would "compromise" the value of both pond and lek because the pond would be surrounded on three sides by the heap leach pad. *Id.* Because of this proximity to the vast toxic pad, "loss of the sage grouse population would still be a potential impact." *Id.* Thus, the authors of the EIR have presented an alternative that was supposedly formulated to protect specific environmental resources, the pond and lek, but that in actuality would jeopardize those resources. One has the sense that this alternative was put forward simply so that the EIR's authors could claim to have examined a facilities location alternative.

The EIR also notes that other facilities location alternatives (and alternatives to the siting of the tailings impoundment and the waste rock dump) were considered early

in the process but rejected from any in-depth analysis. 2-54. Unfortunately, the EIR gives no indication of where and how facilities would have been located under any of these rejected options, and its stated reasons for rejecting them are so vague and conclusory as to be without meaning, e.g., "Environmental, technical, logistical, and economic infeasibilities," "The least logistically and economically favorable wetlands avoidance alternatives." *Id.*

In order to meet the requirements of NEPA and CEQA that reasonable alternatives to a proposed action must be considered in the EIS/EIR, a revised EIS/EIR on the proposed action must consider genuine facilities location alternatives that would legitimately protect the resources they are formulated to protect. The revised EIR should analyze these alternatives in sufficient depth that the reviewer of that document can judge for herself or himself whether the alternative is economically, logistically, technically, and otherwise feasible. The self-serving summary conclusions of the Draft EIR fall far short of the high informational standards demanded by CEQA and NEPA.

E. Power Supply Alternative

CEQA specifically requires that the EIR examine the growth-inducing effects of a proposed action. Cal.Pub.Res.C. § 21100(g). Among other such impacts noted, the Draft EIR states that the extension of a public power line to the project site opens the potential for the construction of 182 new dwelling units, housing 450 to 550 people, along the power line corridor. 4-98. This is so because public power companies are legally required to supply hook-ups on demand to potential residential users along those companies' power corridors. 2-51.

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It is normal CEQA and NEPA procedure to identify and evaluate reasonable alternatives to the Proposed Action during the EIR/EIS process. The agencies use this information to choose preferred alternatives which are identified in the Draft EIR/EIS. At that time the federal agencies Record of Decision and County's Conditions of Approval are made. During the process of approval of permits and licenses, the agencies specify which alternative(s) and conditions are necessary for the Project. The EIR/EIS is an informational and public disclosure document to assist the agency in evaluating the project. Although this alternative is not a part of the Proposed Action, it may become a condition of Project approval in the Records of Decision or Conditions of Approval.

19-42-3

As stated in Section 4.3.7.4, the use of enclosed steel tanks for storing cyanide solutions represents unproven technology for the mining industry. There is the possibility of leaks, overflow, and failure, and the presence of cyanide solutions in the storm event pond. Therefore, it would be possible for wildlife to be exposed to these solutions. This alternative was selected by the BLM for Viceroy Gold for their Castle Mountain Mine in southern California. However, this mining project is under construction, and the effectiveness of this system has yet to be proven. Until this technology is proven, "it is unknown whether this design would actually minimize mortality to wildlife."

In the Habitat Mitigation and Management Plan, Appendix I, the Applicant agrees to use 1" netting on all solution process ponds, inspect netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2 Cyanide on Wildlife, 2.2.8.13, Sodium Cyanide, and 2.2.3.2 and 2.3.1.7 in the Proposed Action have been revised to address this concern. Netting has proven to be effective in minimizing wildlife mortalities at 95 operating Nevada mines. (Personal communication King and Lamp 1991).

The Nevada Department of Wildlife (NDOW) has been collecting data on wildlife mortality due to mining operations since 1986. A newsletter published in November 1990, by NDOW states, "With 95 permittee [mines] reporting to date through the third quarter of 1990, the per-mine wildlife mortality statewide continues to decline, and is at its lowest point since mortality record keeping began in 1986." The yearly total wildlife deaths remained about the same from 1986 through 1990. Preliminary data from the first and second quarters of 1991 shows nearly a 50% reduction in wildlife mortality. This is attributable to the fact that all mines had to comply with pond permit requirements, which includes netting and detoxification, by last year.

The average annual mortality rate per mine in 1990 was 15. This number includes all mortalities, cyanide, non-cyanide, passerine birds, snakes, coyotes, etc, as well as migratory birds.

Netting, when properly installed and maintained, is very effective in excluding birds. The Applicant in the Mitigation Plan agrees to use 1" netting (as per CDFG recommendations), inspect netting daily, and keep a supply of netting on-site for emergency repairs. The goal of mitigation is to prevent wildlife mortality.

The power supply alternative would prevent this growth inducement by requiring LGMI, not the public power company, to install, own, and maintain the power line to the project site. 4-155. LGMI would be under no legal obligation to supply hook-ups to parcels along the corridor and would remove the power line from the mine site to the intersection of Route 2 and Highway 139 after project completion. *Id.* According to the EIR, this alternative, by avoiding growth inducement in this currently little-populated area, would have modest beneficial impacts on air quality and land use and, by removing the power line after mine closure, would improve the visual quality of the corridor. *Id.*

19-42-2

The EIR does not explain why this beneficial alternative was not adopted. A revised EIR should either require power-line ownership by LGMI as a part of the proposed action or state clearly the reasons why this alternative was rejected.

F. Enclosed Cyanide System Alternatives

As discussed in our comments about the impacts of the proposed action on water quality, the project would use large quantities of cyanide in various forms for the extraction of gold. The use of cyanide solutions in the heap leach extraction process would, under the terms of the proposed action, call for the holding of these solutions in a series of open ponds connected by buried pipes. 2-17. Because of the considerable risk to wildlife of open ponds laced with cyanide in a semi-arid climate zone, the proposed ponds would be fenced to keep out wildlife and covered with two-inch-grid netting to prevent entry by birds and bats. 4-35.

Recognizing that such fencing and netting is far from a foolproof method of preventing wildlife mortality, the EIR proposes two alternatives for the containment of

cyanide solution, the placement of floating covers on the ponds and the containment of the solution in a series of steel tanks. 2-52-53. As we will demonstrate in this section of our comments, the second of these, the process solution tanks alternative, must be adopted.

The BLM in Arizona, examining a similar heap leach mining proposal, stated: "Merely netting the ponds would not work. We feel that ducks and other birds would still be able to see water and may become entangled in the netting when attempting to land." July 11, 1988 letter from Yuma Resources Area to Cary W. Meister. Nor will a two-inch-grid net exclude small passerine birds -- and larger birds, if even the slightest tearing occurs. The EIR acknowledges that the netting is at risk of damage from winds and severe winter weather. 4-160. Finally, any farmer or rancher can attest to the fact that there is no such thing as a fence guaranteed to keep all wildlife, down to the smallest rodent, out of any attractive area.

For all these reasons, the proposed action, if implemented, would almost certainly lead to violations by LGMI of the Migratory Bird Treaty Act of 1918 (MBTA), 16 U.S.C. § 703 et seq. The MBTA provides that, except as permitted by regulations, it is unlawful to kill any migratory bird by any means or in any manner. 16 U.S.C. § 703. Violation of the act by unauthorized killing of a single bird is a criminal offense. 16 U.S.C. § 707. In a case of particular relevance to the proposed use of open cyanide solution ponds, unintentional poisoning of migratory birds through pesticide spraying has been held to be a criminal violation. *United States v. Corbin Farm Service*, 444 F.Supp. 510, 532-36 (E.D.Cal. 1978), *aff'd* 578 F.2d 259 (9th Cir. 1978).

The species list in Appendix G of the EIR reveals that approximately fifty species of migratory birds have been observed on the project site. As mentioned previously, open ponds in a semi-arid environment constitute a strong attraction for all wildlife, including migratory birds. In addition, to the immediate south and southwest of the project site are the Silva Flat and Dillon Lake Private Lands Wildlife Management Areas, important breeding habitat for significant numbers of migratory waterfowl. 3-94. Not only do these areas attract adult waterfowl into the region of the project site, but, as breeding habitat, they nurture significant numbers of waterfowl offspring. These young birds, once fledged, are the most likely candidates, due to their inexperience, to be killed or injured through entanglement in solution pond netting at the nearby project ponds. The only way to avoid criminal liability under the MBTA is to use a far better system of cyanide solution containment than the netted ponds of the proposed action.

The floating cover alternative, while preferable to simple netting, is at best problematic. As the EIR acknowledges, floating covers are a "recently developed, unproven technology," untested in harsh winter climates, which may subject them to difficult-to-repair damage or total failure. 4-160. Further, even with undamaged covers, there may still be a danger of wildlife contact with cyanide solution pooled atop the cover, or at the edges of the cover of a relatively full pond.

The only viable alternative for the proper protection of migratory birds and other wildlife from the heap leach cyanide solutions is process solution tanks. This is the approach adopted by Viceroy Gold Corporation for their Castle Mountain Mine in southern California, the most recently approved heap leach gold mining operation in the

state. The only significant objection that the EIR raises to the use of steel tanks is economic; the document estimates that the necessary tank system would cost \$2,750,000. While this is a large sum of money, it can be put properly into perspective by comparison to the \$72 million that LGMI estimates as its initial capital outlay for the mine and the \$36 million in anticipated annual operating costs. Plan of Operations, p. 22. Because the EIR and the Draft Resource Plan do not reveal the estimated value of the gold deposits to be extracted from the mine, there is no basis in the documents for a conclusion that this additional cost of mitigation would be infeasible. Given the size of the sums LGMI expects to spend on this project, this conclusion seems highly unlikely.

The other two negative aspects of the solution tanks alternative that the EIR tenders are scarcely compelling reasons for its rejection. The first is the safety hazard that would be presented to workers entering the tank for repair or maintenance "if adequate personnel safety equipment is not used." 4-163. How many of the various processes and activities contemplated by the proposed action are subject to the same criticism? The solution in all such cases is obvious: mandate the use of proper safety equipment. The second negative aspect of the tanks alternative, which the EIR admits is not significant, is its destruction of an additional 2.5 acres of duripian soils and low sagebrush habitat. *Id.* A simple comparison to the 230 acres that the heap leach pad would cover demonstrate the relative insignificance of this minor additional impact. 2-15.

In sum, there is no valid reason offered why the process solution tanks alternative should not be implemented as part of any approval finally given. Indeed, as we have shown, this alternative must be implemented to comply with the provisions of the MBTA.

19-46-1 On a related note concerning the cyanide heap leach system's impacts on wildlife, the one part of the process that would not be enclosed, even under the solution tanks alternative, is the application of the solution to the heap leach pad, which would occur in the open air. 2-17. The EIR maintains that spray wobblers, which coat the heap leach pad by spraying solution onto it through the air, are safer for wildlife than drip emitters, which drip the solution directly onto the pad. *Id.* This conclusion, which runs counter to logic, is based on the flat assertion that "current applications across the U.S. indicate the use of sprays deter [sic] wildlife activity from the area being treated." *Id.* Unless this unsupported claim can be backed up with some competent studies and data, we strongly urge that only drip emitters be allowed for the project.

XII. INADEQUATE PROVISIONS FOR RECLAMATION

The Hayden Hill mining project cannot be approved without a detailed mitigation monitoring plan, required by CEQA, and a site-specific reclamation plan, required by SMARA. Unfortunately, the drafts of both of these plans, set forth in two appendices to the EIR, are of so general a nature that it is impossible to determine from either whether the project site could and would be successfully reclaimed and whether there would be adequate monitoring to judge with any accuracy reclamation success. Indeed, the draft monitoring program is so vague and abstract that it can best be characterized as a plan to make a plan, not a draft of the required detailed mitigation monitoring plan itself. As explored in further detail in this section, far more detailed plans need to be formulated and subjected to careful analysis under CEQA and NEPA before any decision can be made as to the advisability of the proposed action, and before the required

findings of fact as to significant environmental impacts of the proposed action can be made under CEQA.

19-47-2

A. Preliminary Draft Mitigation Compliance Program

CEQA requires that the agency approving a project under the act must "adopt a reporting or monitoring program for the changes to the project which it has adopted or made a condition of approval in order to mitigate or avoid significant effects on the environment." Cal.Pub.Res.C. § 21081.6. This program "shall be designed to ensure compliance during project implementation." *Id.* The mitigation monitoring program is thus a crucial element in ensuring that the adverse impacts of a project are properly mitigated so as to minimize harm to the environment.

Obviously, whether or not the mitigations proposed for the Hayden Hill project would actually work could only be determined by a careful and detailed program to monitor the implementation of those measures. This program would ensure that mitigation activities were performed as planned, gauge the effectiveness of the mitigations through scheduled observations and reporting, and alert LGMI and the responsible agencies to the need for amendments to the mitigation program if planned mitigation measures turned out to be ineffective or even harmful.

Unfortunately, the "Preliminary Draft" of a mitigation monitoring program set forth in Appendix D is, as already noted, not a monitoring program at all, but merely a general set of principles and guidelines for creating such a program. One searches in vain for even a tentative schedule of specific monitoring actions proposed, their degree of precision, the frequency of reporting, or any of the other details that must be contained

in a valid monitoring program to "ensure compliance during project implementation," as CEQA requires. The core of the program appears to be relegated to an appendix (Appendix B), which in the draft is merely a place-holder, *i.e.*, the text of this appendix simply informs the reader that (presumably in final form) it will specify "mitigation conditions, compliance criteria, monitoring activities, and schedules for compliance." D-19. Likewise, Appendix C to the Preliminary Draft describes generic reporting forms and does not even present a blank sample. D-21-22.

This utter vagueness is utterly inexcusable. The proposed action as presented in the Draft EIR is subject to numerous proposed mitigation measures. Putting aside the issue of the insufficiency of some of these measures to mitigate sufficiently the adverse impacts of the project, we see no reason why the EIR does not provide a draft mitigation monitoring plan that sets forth in detail how and when these measures would be implemented, how and how often their success would be measured and reported upon, and how changes would be made to the mitigation program based on the outcome of such monitoring. Naturally, this plan would have to change to accommodate any changes and additions to mitigation measures adopted if and when the project is approved.

Nonetheless, the presentation of a detailed draft monitoring plan in a revised EIR is essential to an informed judgment by both the decisionmakers and the public concerning the degree to which the acknowledged significant adverse impacts of the proposed action would be mitigated. Without a review of the very program that would determine the success of mitigation and dictate adjustments in the event of mitigation failures, it is impossible to draw any rational conclusion about the likely effectiveness of the mitigation

19-49-2

The revised Reclamation Plan (Appendix E) includes more detail on reclamation of the site. We believe sufficient information is provided to assess the success of the reclamation. Research often identifies faults and improvements to reclamation plans and is considered useful. We feel the research is necessary to provide site specificity to the plan. A project description is required as a part of the Reclamation Plan, by some of the participating agencies, in order to make the Plan a stand alone document.

measures proposed.

B. Draft Reclamation Plan

Throughout these comments, we have criticized various elements of the proposed action's plans for the reclamation of the Hayden Hill site after the completion of mining operations. Because a reclamation plan that will ensure the successful reclamation of a proposed mining area is a prerequisite to any authorization of mining under SMARA, and, in addition, is among BLM's requirements for the approval of a plan of operations, we want to underline our concerns in this regard by concluding these comments with an examination of some of the major shortcomings of the Draft Reclamation Plan set forth in Appendix E of the Draft EIR.

19-49-2

Put plainly, the Draft Reclamation Plan lacks sufficient detail and precision to offer any assurance that reclamation of the Hayden Hill site would be successful. Fully half of this document is merely a description of the planned mining activities and site, repetitive of the EIR's discussions. To a very large degree, especially in the critical area of revegetation, the "Plan" relies entirely on studies to be conducted during mining operations to determine how and to what extent lands can be reclaimed. 4-23. Rather than a concrete plan that can be examined and criticized before damage to the environment begins, the reader is given a general document that basically says "Trust us" to find ways and means to reclaim successfully after the mining process is well under way. Under CEQA and NEPA, both of which require that the public and decisionmakers be informed of the likely environmental impacts of a proposed action prior to its approval, this approach does not pass muster.

19-50-3 It is anticipated that with the collection and use of the B horizon soils, sufficient topsoil will be available. See Sections 3.3 and 4.2.3 for more information on this subject. Speculation of the impacts of a shortage of this material is unwarranted in an EIS.

We note that the Castle Mountain Mine in southern California, the most recent heap leach gold mining operation to be approved in the state, had a complete, detailed, site-specific reclamation plan promulgated and reviewed prior to final approval of the mining project. BLM should require no less of the Hayden Hill project or any other proposed heap leach operation.

The summary that follows is by no means an exhaustive listing of the numerous inadequacies of the Draft Reclamation Plan.

19-50-3 Starting with the most basic resource for successful reclamation, soil, the Draft Reclamation Plan does not even offer assurances that there will be sufficient topsoil available to reclaim land to a 12-inch soil depth, despite the assumptions throughout the EIR's discussions of impacts that this amount of soil will be available. The Plan merely proposes that, if sufficient soil for 12-inch depths is not available, "8 inches will be the goal." E-24. How this might alter revegetation plans is nowhere considered. Further, no provision is made in the Draft Plan for the segregation of distinct topsoil types to allow site-specific reclamation of various areas, despite the EIR's acknowledgments that topsoil homogenization will be an adverse impact of the project. 4-19. The soils are simply to be stored at three generic "growth media stockpiles." E-24; App. E, Fig. 3.

Beyond the problems of sufficiency of topsoil reserves and deferred testing of revegetation success, there are a series of severe problems with the Draft Reclamation Plan's approach to revegetation. While five seed mixtures are proposed for planting, no information is offered concerning whether the plants included in these mixtures are native to the area, currently grow there, or are otherwise appropriate to the site.

19-51-3 Post-mining monitoring will continue until the bond release criteria shown in Section 4.14.5 of the revised Reclamation Plan (Appendix E) are reached. It is typical for the CRWQCB to require monitoring for five years or more on projects of this nature. We believe the release criteria and the requirements of the CRWQCB will sufficiently protect the environment.

E-20-21. Further, the seed mixtures, taken together, contain only sixteen different plant species, in stark comparison to the 200 species that currently exist on the site. *Id.* The success of revegetation efforts is to be measured by percent of vegetative cover alone.

E-29-30.

A revised, detailed reclamation plan must correct these serious flaws in the revegetation program. Provision must be made to propagate, through seed collection, transplanting, and other appropriate means, a representative variety of the plants native to the five vegetation types that currently exist on the site. The criteria for revegetation success must include plant density and diversity, not cover alone. Approximating the density and especially the diversity of plant species that currently exist on the site is essential to the restoration of habitat values for wildlife.

19-51-3 According to the Draft Reclamation Plan, the post-mining phase of reclamation will take one to two years, and post-closure monitoring of revegetation success, erosion control, and water quality will continue "an additional one to five years" beyond that phase. E-28. In other words, the Draft Reclamation Plan explicitly contemplates the cessation of all environmental monitoring as early as two years after the end of mining. The detailed mitigation monitoring program and an adequate reclamation plan must require that mitigation monitoring continue (less frequently with the passage of years and evidence of success) for ten years after mine closure.

Finally, the Draft Reclamation Plan notes that LGMI estimates reclamation costs at \$2,665 per acre, or \$2,531,750 for the entire project. E-29. Presumably this is the amount that LGMI proposes as the basis of the required reclamation bond. However,

19-52-1 The IM cited suggests categorizing costs but does not require it. The revised Reclamation Plan includes a breakdown of reclamation costs in Section 4.14 (Appendix E).

19-52-1 the Draft Plan acknowledges that this amount does not take into account the costs of either the dismantling and removal of facilities or the monitoring of mitigation measures.

Id. Further, given the significant deficiencies in the Draft Reclamation Plan and the absence of a real mitigation monitoring program, the costs of proper reclamation might well be significantly higher than the figures LGMI proposes. The reclamation bond amount ultimately set must reflect the full costs of appropriate and successful reclamation of the site.

FROM: USFWS FIELD OFFICE SACCC-9 TO: 9162574831 MAY 29, 1991 7:19PM #429 P.02



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Fish and Wildlife Enhancement
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846



In Reply Refer To:
PPN 908

May 28, 1991

To: USDI-BLM, Susanville District Office, Susanville, California
(Attn: John Bosworth)

From: Acting Field Supervisor, USDI-FWS, Sacramento Field Office, Sacramento, California

Subject: Draft Environmental Impact Report/Statement, Hayden Hill Project;
Lassen County, California

20-1-2 The Fish and Wildlife Service has reviewed the Draft Environmental Impact Report/Statement for the proposed Hayden Hill Project in northern Lassen County, California. The project applicant, Lassen Gold Mining, Inc., proposes to construct and operate an open pit gold and silver mine on 2800 acres of Federal and private lands. Within this area, approximately 950 acres would be directly disturbed by mine excavation, waste rock disposal, overburden stockpiles, cyanide heap leaching, tailings storage, ore processing facilities, and related activities. The following comments are provided to assist the Bureau of Land Management, U.S. Forest Service, and Lassen County in their review and assessment of project impacts.

GENERAL COMMENTS

The draft document provides a generally complete overview of the proposal and its environmental consequences. However, several project features and mitigation measures are not described in detail, or are assumed to be the responsibility of other permitting agencies and therefore not included in this document. Although we recognize that the final form many of these measures take will be dependent upon specific requirements that have not yet been established, we are concerned that later actions may not receive the more comprehensive interagency review given to the present draft document. In particular, we note the very general nature or absence of the following items:

- a complete mine reclamation plan
- mitigation plans for wetlands and other high-value habitats
- monitoring and contingency plans for the heap leach facility, solution ponds, waste rock dump, and project area stream corridors (fish, wildlife, and water quality)

20-1-5

20-1-2 The Reclamation Plan has been revised. More detail has been added. See Appendix E.
A wetlands mitigation plan is included in Appendix I.

20-1-5 Please see final EIR/EIS for inclusion, of the Spill Prevention and Control Countermeasure Plan (SPCC) (Appendix L), Emergency Response Plan (ERP) (Appendix L), and Geochemical Sampling and Contingency Plan. (Appendix M)

The SPCC Plan and ERP explain the measures to be taken in the event of an accidental spill from any of the project facilities and into Willow Creek.

2

It is important that all agencies with trust responsibilities for project-area resources be given the opportunity to review and comment on all aspects of the project at the earliest possible stages in project planning, and that commitments to project design are not made without the inclusion of specific mitigation measures for each project feature affecting those resources.

20-2-2 The Service has documented numerous instances of migratory bird mortality associated with heap leaching and cyanide solution ponds. The applicant has proposed measures to reduce the threat of these operations to wildlife. However, there are no data or case histories cited in the draft document to support the contention that these measures will avoid such impacts, or that net exclusions will not also be hazardous to birds. Therefore, we must conclude that some take of migratory birds may occur over the life of the mine, and that the level of take will be dependent upon the effort expended to monitor and maintain facilities. Because the Migratory Bird Treaty Acts prohibit take, we also recommend that the applicant contact the Service's Law Enforcement Division at (916) 978-4861 to clarify their responsibilities under these Acts.

20-2-3 The draft document identifies three federally listed endangered species, the Modoc sucker (*Catostomus microperca*), bald eagle (*Haliaeetus leucocephalus*), and American peregrine falcon (*Falco peregrinus anatum*) that may be affected by construction and operation of the Hayden Hill mine. Section 7(a)(2) of the Endangered Species Act of 1973, as amended (Act), requires that any action authorized, funded, or carried out by a Federal agency will not jeopardize the continued existence of an endangered or threatened species. As a result, this section of the Act, and its implementing regulations, require Federal agencies to initiate formal consultation with the Service when a Federal action may affect a listed or endangered species.

20-2-4 Section 9 of the Act prohibits the "take" of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" any such wildlife species. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter (50 CFR § 17.3). Take incidental to otherwise lawful activity may be authorized through the formal consultation process if a Federal agency is involved with the permitting, funding, or carrying out of the project. Such consultation would result in a biological opinion that addresses anticipated effects of the project to listed species.

20-2-5 The entire known range of the Modoc sucker is restricted to ten streams in the Pit River drainage in Modoc and Lassen Counties. Because of its restricted range, adverse effects to a single stream population can represent a severe impact on the species. The Willow Creek population of the Modoc sucker may be affected by 1) chemical or fuel spills from project-related trucking along Highway 139 and the Hayden Hill access road, 2) stream sedimentation and obstructions to fish movement caused by reconstruction of the crossing at the

20-2-1 The USFWS received the NOI at the same time as all other agencies in October 1989. The USFWS office in Washington D.C. was shipped three copies of the draft on April 5, 1991. Formal consultation has been initiated by the responsible agencies (BLM).

20-2-2 The Nevada Department of Wildlife (NDOW) has been collecting data on wildlife mortality due to mining operations since 1986. A newsletter published in November 1990, by NDOW states, "With 95 permittee [mines] reporting to date through the third quarter of 1990, the per-mine wildlife mortality statewide continues to decline, and is at its lowest point since mortality record keeping began in 1986." The yearly total wildlife deaths remained about the same from 1986 through 1990. Preliminary data from the first and second quarters of 1991 shows nearly a 50% reduction in wildlife mortality. This is attributable to the fact that all mines had to comply with pond permit requirements, which includes netting and detoxification, by last year.

The average annual mortality rate per mine in 1990 was 15. This number includes all mortalities, cyanide, non-cyanide, passerine birds, snakes, coyotes, etc, as well as migratory birds.

20-2-3 The USFWS office has been informed of the Project since 1989. Turn-over in agency personnel may have hindered continuous communication. As stated in Chapter 6.0 we were aware of our responsibility in initiating Section 7 consultation. We decided to start Section 7 consultation concurrent with the public release of the Draft EIR/EIS.

Comment acknowledged.

20-2-4 Highway 139, carrier, State and County regulations, are discussed in Transportation, Section 4.2.12 and in the revised wildlife Section 4.2.5. An Emergency Response Plan has been prepared in the event of a spill into Willow Creek, and is included in Appendix L.

The culvert crossing was a multi-agency effort involving the USFWS, CDFG, Caltrans, and the County road commission to ensure the best design, installation, and maintenance practices for safety as well as fish passage. There are currently two water sampling stations set up on Willow Creek, to monitor water quality and quantity.

20-3-1 Spills of sodium cyanide are not likely to occur in Preston Canyon, due to its location away from the Project. The possible locations for such a spill are along Willow Creek on Highway 139 and along the unnamed drainage on the access road. The SPC and ERP located in Appendix L address this concern. Acid rock drainage down Preston Canyon is addressed in Water Resources, Section 4.2.6, and in the Geochemical Sampling and Contingency Plan located in Appendix M. Impacts to surface and groundwater are discussed in detail in Water Resources Section 4.2.6.

20-3-2 Solution ponds will be netted and the tailings impoundment neutralized. No toxic open solution will be exposed. Other bodies of water (ponds, lakes, etc.) are located within a mile of the Project area.

20-3-3 Please see response 20-2-3 on previous page.

20-3-5 Table 1.6-1 has been revised to include consultation in the list of permits, as noted.

20-3-6 Ore zones of gold deposits such as the one at Hayden Hill have boundaries which are defined by mineralized material that can be mined at a reasonable return on investment (Ore) and mineralized material which cannot be mined economically (Protore). The ore reserve at Hayden Hill was calculated using a \$400 per ounce gold price, and the mine life estimated according to the target production rate of approximately 6 mt of ore per year. Therefore, it is possible for the mine life to vary by as much as two years, resulting in a 6 to 10 year mine life. Eight years for the mine life is a medium number. However, it is speculative to determine future economics. CEQA guidelines do not require speculative evaluations in an EIR.

20-3-7 Probable and possible material may prove to be ore if gold prices increase in the future, which would increase the size of the pit. However, any additional surface disturbance or significant change that would affect the POO would have to be approved through revisions or modifications to the permits.

20-3-8 More information regarding the run-off diversion structures is included in the "Report on Detailed Design of Heap Leach Pad, Tailings Storage Facility" (KP 1990b) and in the SRK Reclamation Plan (see Appendix E). All disturbed areas, including those resulting from diversion channel construction, were analyzed for impact in Chapter 4.0. Design documents are available for review with the County.

Section 2.2.8.8 has been revised to include more information on netting use.

3

20-3-1 Intersection of these two roads, 3) major accidental or long-term minor discharges of sodium cyanide or other chemicals through Preston Canyon to Willow Creek, 4) degradation of Willow Creek water quality resulting from erosion in the project area, and 5) a reduction in Willow Creek recharge resulting from disruption of the shallow groundwater system.

Foraging bald eagles may be attracted to the area if solution ponds or other collection basins attract and/or entrap waterbirds or other wildlife species. The presence of open water, if visible, in an otherwise arid landscape may draw these species to the project area and thereby expose them to toxic material.

20-3-3 Based on the above considerations, we have concluded that the proposed action constitutes a major construction activity which may affect a federally listed endangered species. Therefore, we recommend that the Bureau of Land Management and U.S. Forest Service review their requirements for compliance with Section 7 of the Act, and contact the Service regarding formal consultation requirements. We further recommend that consultation be completed prior to publication of the final document.

SPECIFIC COMMENTS

Page 1-9, Section 1.5.5. The project schedule outlined may be overly optimistic, given the need for preparation and review of more detailed planning and mitigation documents, and the seasonal constraints on project construction.

20-3-5 Page 1-11, Table 1.6-1. The list of Federal permits and approvals shown in this table should include consultation with the Fish and Wildlife Service on federally listed endangered species.

20-3-6 Page 2-6, fourth paragraph. Since later statements allude to the fact that the life of the mine will be tied to the economics of gold and silver extraction, upper and lower limits on the estimated 8-year mining period should be included.

20-3-7 Page 2-9, second paragraph. The details of run-off diversion design and construction for the waste rock dump and other facilities (including the heap leach and tailings pads) should be discussed and diagrammed in this chapter, and their impacts on habitat addressed in Chapter 4.

20-3-8 Page 2-17, third paragraph. The design and placement of netting to exclude wildlife should be described in much greater detail. The netting must keep wildlife out of the solution ponds, prevent entrapment, and be placed and monitored to maintain adequate clearance over the pond surface. Since the ponds cover 2 to 3 acres, these details deserve more attention.

20-4-1 Section 2.2.3.2, Leach Solution Application System, has been revised to address the commentor's concern. The ore will be placed by conveyors which results in a heap with higher infiltration rates than equipment placed ore; thereby minimizing ponding potential. Solution application rates will be adjusted to eliminate any ponding.

20-4-2 More information regarding the run-off diversion structures is included in the "Report on Detailed Design of Heap Leach Pad, Tailings Storage Facility" (KP 1990b) and in the SRK Reclamation Plan (see Appendix E). All disturbed areas, including those resulting from berm and diversion channel construction, were analyzed for impact in Chapter 4.0.

20-4-3 Mercury is not used in the proposed gold recovery process at Hayden Hill. As a naturally occurring element in rock, some mercury will be recovered in the refining of precious metals. The recovered metal will be contained in flasks and sold.

20-4-4 Please refer to Figures 2.2-1 and 2.2-5. The tailings are deposited in a slurry at the top of the tailings beach (the northeast curved side of the tailings impoundment). The slurry will slowly flow from the northeast to the decant tower and decant basin in the southwest corner. As this flow takes place a significant portion of the water evaporates. The design of the tailings impoundment combined with subaerial deposition of the tails and the high evaporation at the site will produce a "dry" tailing impoundment (wetted, but no standing water) except, possibly during periods of snow melt and intense precipitation events. Decant and process water is the same. When water is present in the tailings pond, it is decanted (hence decant) to the process water pond. The water is held in the process water pond until it is pumped back to the mill. The tailings are detoxified before deposition, therefore, the water is nontoxic. Bird netting is not necessary for the tailings facilities.

20-4-5 The diversion ditches engineered to accommodate run-off from precipitation events are routed into this detention pond. The detention pond is a sedimentation pond for control of sediment run-off from the site. The water in this pond is anticipated to be tainted only by sediment, therefore, it is not necessary to protect wildlife from this pond. The pond is within the Project boundary fence.

20-4-6 It is not necessary for an EIR/EIS to contain information of this nature. The design for the Hayden Hill Road-State Highway 139 connection upgrade has been submitted to the responsible agencies, including the Lassen County Road Department, the CDFG, and Caltrans. This information is available for review at the County offices.

20-4-7 A final Reclamation Plan approved by the BLM, USFS, and County in conjunction with the CRWQCB, and the California Division of Mines and Geology has been completed and is included in this document as Appendix E.

20-4-8 The return water pond is the same pond as the tailings process water pond. The water in this pond will not be toxic, therefore, bird netting is not required.

20-4-9 Yes. The netting is superior from both construction and operations standpoints. Technically and economically, netting is a proven superior protective device.

4

20-4-1 Page 2-17, last paragraph. Describe here or in the earlier description of the heap leach processing (p. 2-14) how ponding of the cyanide solution on the surface of the heap will be prevented, or specifically to what extent it cannot be avoided.

20-4-2 Page 2-18, sixth paragraph. As mentioned above, berm or diversion ditch specifications should be included in this discussion.

20-4-3 Page 2-22, Section 2.2.3.4. Since mercury will be used in the gold recovery process, it should be listed in Table 2.2-4. The quantities of mercury contained onsite and method of containment should also be described in Section 2.2.8.10.

20-4-4 Page 2-23, Section 2.2.4.1. The description of the tailings impoundment is unclear as to where open water will be present within this facility. It is also not clear whether the "decant" and "process water" ponds are the same features, since the words appear to be used interchangeably. If open water from the mill tailings will be present, it is important that this water be covered with getting to exclude birds, since some level of cyanide contamination will still be present. Furthermore, any open water may attract birds, and every effort must be made to discourage their use of the project area.

20-4-5 Page 2-26, Section 2.2.5. In addition to further details on the control of surface runoff, the connection between this system and the 15-acre detention pond at the southwest corner of the site needs to be explained. If this pond is to be filled for extended periods, some provisions for monitoring and wildlife exclusion may be necessary.

20-4-6 Page 2-30, first paragraph. Details of the design and construction of the Willow Creek crossing at the intersection of Highway 139 and Hayden Hill Road should be provided.

20-4-7 Page 2-40, third paragraph. Since the closeout and reclamation plan presented in this document is largely conceptual, we are concerned that review of a detailed plan by all concerned agencies and individuals may not be possible until the final document is released. A more specific plan should be subject to agency, if not public, review prior to its incorporation into the final document.

20-4-8 Page 2-42, last paragraph. Is the "return water" pond mentioned here the same as the "decant" or "process water" ponds described elsewhere? If not, how will wildlife be excluded from this pond?

20-4-9 Page 2-53, second paragraph. Has the actual incremental cost increase associated with the process solution tank alternative been calculated? How might the cost compare to net-covered ponds if additional monitoring and maintenance to prevent wildlife mortality are required for the latter method?

- 20-5-1 Consultation is discussed in Chapter 6.0. Formal consultation was initiated by the BLM in July 1991, with a Biological Assessment, Case No. 1-1-91-SP-664. The USFS, USFWS, and the CDFG have all helped develop and review the Emergency Response Plan for Modoc sucker. Sections 4.2.5.3 and 4.2.5.5 have been revised to include mitigation requirements for the Modoc sucker, from consultation with the USFWS. Pertinent information on the Section 7 consultation with the USFWS are included in Appendix N.
- 20-5-2 Comment acknowledged. We believe that cover values, Jeffrey pine and some shrub species will be successfully established at the site. The production levels of the Jeffrey pine may not equal previous levels, however, there is little question they will become established. See Section 4.2.4.2 for more information.
- 20-5-3 The Draft EIR/EIS states, at page 4-30, that the 404 permit requirements will be met. The 404 permit requires mitigation for all impacted wetlands. It is the Corps of Engineer's and EPA's responsibility to condition and approve this permit, including the mitigation proposal. However, the mitigation plan for wetlands protection is included in Appendix I.
- 20-5-4 Section 4.9 of the revised Reclamation Plan (Appendix E) includes methods of analysis for success of the reclamation. The criteria for vegetative success is based on a comparison to similar, existing, undisturbed and previously disturbed areas. Cover as well as density and species richness will be monitored.
- 20-5-5 In Section 2.2.8 of the Proposed Action, it is stated that all pregnant and barren solution ponds will be netted. Several sections of the document clearly state that all ditches bearing cyanide solution will be enclosed. There will be no exposed toxic cyanide anywhere other than at the heap in conjunction with the spray or drip system.
- In the Habitat Mitigation and Management Plan, Appendix I, the Applicant agrees to use 1" netting on all solution process ponds, inspect netting daily, and keep a supply of netting on-site for emergency repairs. Sections 4.2.5.2, 2.2.3.2 and 2.3.1.7 have been revised to address this concern.
- The tailings impoundment solution will be neutralized to cyanide concentrations not lethal to wildlife. Cyanide levels in the tailings will be monitored daily and detoxification systems adjusted accordingly.
- As stated in the Mitigation Plan, if mortalities do occur measures to correct the situation and prevent additional mortalities will be taken in cooperation with CDFG and USFWS.
- 20-5-6 The word fuel has been added to the paragraph. In Sections 4.2.5.3 and 4.2.5.5 the Run-off from Highway 139 and Other Roads section discusses this potential impact further. Highway 139, carrier, State and County regulations, are discussed in Transportation, section 4.2.12. The SPCC and Emergency Response Plan (included in Appendix L) have been prepared in the event of a spill on-site or into Willow Creek.
- 20-5-7 Sufficient mitigation is provided for the temporary loss of this vegetation type and to ensure that the proposed reclamation will return the site to the post-mining land use goals.

- 20-5-1 Page 3-38, third paragraph. Visual deterioration of the presence or absence of the Modoc sucker in Willow Creek is also possible, particularly at low water, thus eliminating the need for fish capture, and some additional surveys may still be necessary as project planning proceeds. In any event, the potential for project-induced impacts on this species indicates that formal consultation with the Service is now required.
- 20-5-2 Page 4-25, fourth and fifth paragraphs. It should be acknowledged here that there is little likelihood that a significant portion of the site will develop Jeffrey Pine/Mountain Shrub cover over any time period. It is stated elsewhere (p. 4-31, last paragraph) that reclamation of well-developed (i.e., harvestable) forest cover will not be possible, and that most of the site will revert to grassland and low shrub habitats. Therefore, lost habitat acres and values for the forest/shrub cover type, as well as for areas not expected to revegetate at all, should be considered in the requirements and design of both habitat restoration and mitigation.
- 20-5-3 Page 4-27, first paragraph. A wetlands mitigation plan should be a part of the draft document so that reviewers can assess the plan's feasibility and adequacy in compensating for project impacts on these habitats. Contrary to the implication on p. 4-30, it is not the responsibility of the Corps of Engineers to determine mitigation requirements, and the mitigation proposal should be a part of the Section 404 permit application.
- 20-5-4 Page 4-31, first paragraph. Reclamation goals and success criteria for each vegetation cover type should be based on pre-project values for dominants within each stratum. If restoration of pre-project conditions cannot be achieved, the plant cover type designations should reflect expected species composition. Moreover, the importance values for existing cover types (Table 3.4-1) appear to be based solely on ground cover, and do not include trees or tall shrubs, while the descriptors used here refer to "canopy" species. If these distinctions are not recognized during reclamation monitoring, how will success be measured?
- 20-5-5 Page 4-33, first paragraph. Based on information presented in this document, we do not agree that issue 1 has been fully addressed. The design and maintenance of netting over solution ponds are not adequately described and documented, and the possibility of wildlife coming into contact with toxics or contaminants in uncovered ponds or ditches is not considered.
- 20-5-6 Page 4-38, fourth paragraph. Potential lethal impacts to Modoc sucker in Willow Creek would also include fuel spills along transportation/stream corridors.
- 20-5-7 Page 4-44. Considering the length of time necessary for recovery of Jeffrey Pine/Mountain Shrub habitat, if it recovers at all, consideration should be given to protection of at least an equal area of forest offsite in perpetuity. Especially since it is also proposed that wetland mitigation measures be implemented on the same lands.

- 20-6-1 "Enhancement" of wetlands may not be sufficient to offset lost habitat acres and values. Creation or restoration of these habitats should also be considered.
- Although it is mentioned elsewhere that some stream alteration (expressed in linear feet) will occur, there is no description of the "riparian" habitat that will be affected. The affected habitat should be fully described and mitigated in-kind.
- 20-6-3 Page 4-45, Table 4.3-2. We note that wildlife mortalities due to exposure to cyanide are acknowledged here, even though there has been no attempt to address them elsewhere in the document. If such losses are expected to occur, how will they occur? What sequence of events is likely to lead to "net failure"? What is the expected frequency of occurrence of these events over the 8 or more year life of the mine? Placement of a gravel cap over the leaching site is an extreme measure, yet the mechanism of ponding on the heap and any specific measures that might be necessary to avoid ponding have not been discussed. Finally, the mitigation goal should be to prevent wildlife mortalities during mine operations, particularly where major losses could occur (i.e., due to cyanide exposure).
- 20-6-4 Page 4-63. The monitoring and contingency plans identified here and on p. 64 for waste rock, tailings, and heap leach facilities should be presented in at least conceptual form. At a minimum, there needs to be some discussion of response times to the various problems, and the impacts to fish and wildlife that might result during these time periods
- 20-6-5 Page E-26, Section 7.3.4. How will process water ponds and other impoundments be monitored and maintained during closure to prevent wildlife losses? Will the level of effort be in any way reduced below that given to monitoring mine operations?
- RECOMMENDATIONS
- Based on our review of the information presented in the draft document, and the need for additional information on monitoring, mitigation, and contingency plans for mine operations and closure, we recommend the following:
1. A revised Draft Environmental Impact Report/Statement should be prepared which includes monitoring, mitigation, and contingency plans for operations, closure, and long-term reclamation.
 2. The Bureau of Land Management should initiate formal consultation with the Service pursuant to Section 7 of the Endangered Species Act.
 3. Monitoring and contingency plans should include provisions for suspension of operations if losses of fish or wildlife occur.

- 20-6-1 Section 4.2.4.2 has been revised to better describe the wetland vegetation. In addition, Appendix I includes a wetlands mitigation plan. A wetlands mitigation plan is included in Appendix I.
- 20-6-3 Net failure is most commonly caused by high winds and snow loading. 1" mesh is more susceptible to these failures due to a "parachuting" effect in high winds and the propensity to hold snow. The most common cause of net failure is heavy wet spring snows. The net sags into the ponds and the anchoring system fails with the weight. The nets can become frozen in the ponds and tear. The frequency of mortalities expected at projects such as this is disclosed in Section 4.2.5.
- Netting, when properly installed and maintained, is very effective in excluding birds. The Applicant in the Mitigation Plan agrees to use 1" netting (as per CDFG recommendations), inspect netting daily, and keep a supply of netting on-site for emergency repairs. The goal of mitigation is to prevent wildlife mortality.
- The ore will be placed by conveyors which results in a heap with higher infiltration rates than equipment placed ore; thereby minimizing ponding potential. Also the flexibility of using spray or drip emitters will keep application rates from being too heavy. The heap will be inspected for ponding problems. Solution application rates will be adjusted to eliminate ponding.
- Design features such as liner containment and leak detection and collection systems will minimize the potential for surface or ground water contamination.
- If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDRs) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the Regional Board at public hearings. The general public may review these documents and provide comments prior to their adoption.
- LGMI will also rely on the Spill Prevention and Control Countermeasure Plan (SPCC) and the Emergency Response Plan (ERP) to effectively respond to possible threats of surface and ground water contamination. These plans and the Geochemical Sampling Plan are included in the appendices.
- This provides three measures of protection and response to intercept possible contaminants before entering ground or surface water.
- 20-6-5 The level of effort for sampling and monitoring will be the same as during mining. Monitoring will be conducted according to Waste Discharge Requirements during closure. Fencing and netting will remain in place during heap closure. Removal will occur after cyanide levels are within the Waste Discharge Requirement stipulations and are non-toxic to migratory waterfowl.
- 20-6-6 The basic criteria for mitigation were set forth in Chapter 4.0 of the Draft. These criteria have since been updated. The revised Chapter 4.0 and Appendices D, E, G, I, L, M, and N contain the details of mitigation.

20-7-1 Comment acknowledged. The environmentally preferred alternatives are identified in Section 2.1
20-7-2 The USFWS has been added to the distribution list (Appendix J)

7

4. If the proposed action is selected, we further recommend that consideration be given to alternatives that appear to be less environmentally damaging, including the use of solution tanks and backfilling of the mine pit to enhance reclamation.

20-7-2 Finally, we request that the Service's Sacramento Field Office be added to the Distribution List (Appendix J) for future documents. We did not receive a copy of the present draft document until half-way through the comment period, thereby considerably reducing the time available for review and coordination between Service programs.

We appreciate the opportunity to comment on the draft document. If you have any questions regarding these comments, please contact David Dansmore at (916) 978-4613. Questions concerning endangered species consultation requirements should be directed to Peggie Kohl or Nadine Kanim at (916) 978-4866.

Gail C. Kobetch

cc: ARD (FWE), FWS, Portland
BFA (ERT), WO

RECEIVED

MAY 30 1991

LASSEN COUNTY
PLANNING DEPT.

1345 Main Street
Red Bluff, California 96080
916-527-2667

UNITED STATES
DEPARTMENT OF
AGRICULTURE
Soil
Conservation
Service

5/10/91

Lassen County Planning Dept.
707 Nevada St., Room 236
Susanville, CA 96130
ATTN: Marle Anderson

We acknowledge receipt of the Draft EIR/EIS for the Haden Hill Project, Lassen County, California. Our comments follow:

21-1-2 The California Department of Fish and Game has indicated that the proposed action will result in the loss of two known strutting grounds for Sage Grouse. Mitigation proposed to offset the loss of two sage grouse strutting grounds (leks) in table 4.5-1 and on page 4-43 is probably inadequate. These two strutting grounds which will be lost due to project actions are some of the western most Sage Grouse strutting grounds known to exist. There removal will shrink the present sage grouse distribution and habitat. Replacement of known strutting grounds by creating artificial strutting habitat is not a proven technique. Measures to insure the security of other known sage grouse strutting grounds located off-site would be more appropriate.

21-1-3 Mitigation for antelope habitat losses associated with the project are more difficult to evaluate. If known sage grouse strutting grounds are secured off-site, mitigation for antelope losses could possibly be found at the same site. Improved livestock grazing practices are suggested as mitigation for lost antelope habitat however, improved livestock grazing usually results in improved ground cover and more extensive stands of grasses. Antelope are more dependent on forbs (lower successional plants). For this reason improved livestock grazing will not necessarily mitigate for impacts on antelope habitat resulting from the proposed action.

21-1-4 Mitigation for the removal of Jeffrey pine is considered on page 4-30. The project plans call for replanting disturbed areas with 500 Jeffrey pine seedlings per acre. This will result in insufficient mitigation since the area to be planted is a shallow site and will provide only 12 inches of rooting depth. Twelve inches of growth medium is not going to produce trees of a size or form that in any way compares with the Jeffrey pines currently growing on the site.

21-1-5 Reclamation of the project will be considered successful if the sites dominated by Jeffrey pine and mountain shrub achieve 17% ground cover. This goal seems awfully low considering there are now 405 Jeffrey pine plants per acre (ppa) and 2505 serviceberry ppa plus others on the site before operations commence. Given the nature and coarse texture of the material, plant establishment will be very difficult.

21-1-2

CDFG and the Applicant, LGMI, have agreed upon a Wildlife and Habitat Management Plan. The Habitat Mitigation and Management Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4-4.2.5.5 and tables have been revised to reflect the contents of this Plan. The passive Relocation Plan will take place for two more seasons.

The Mitigation Plan states that if the sage grouse relocation plan fails, a contingency plan will be implemented to provide off-site enhancement to support a compensatory grouse population of 25-40 birds. Passive relocation will take place two or more seasons. A revised sage grouse relocation plan is included in Appendix G. The Mitigation Plan is included in Appendix I.

21-1-3

The Mitigation Plan, located in Appendix I, states that the goal for pronghorn is to maintain the population and distribution similar to those during premining conditions. This will be achieved by managing a created wetlands to maximize forage production, as well as managing grazing on 355 acres of adjacent habitat. Seasonal aerial and ground counts will be conducted for monitoring.

21-1-4

The agencies involved concur that the seedlings and other reclamation activities will replace the cover and habitat values of the pre-mining vegetation. The productivity may be less, however, there is agreement that the existing productivity is also very low. Hence, the lack of logging in the area now.

21-1-5

It is unrealistic and unnecessary to require the Applicant to reclaim to a cover value beyond that existing. However, Sections 4.8 through 4.10 of the revised Reclamation Plan (Appendix E) include monitoring for density and species richness as well as cover. Goals for these parameters will be 80% of existing for cover, and 60% of existing for density and species richness. Comparison evaluations to existing, similar vegetation will be made annually.

21-2-1

Additional storm water hydrology and sedimentation studies have been completed to evaluate and formulate effective measures to reduce sedimentation arising from storm water erosion. Please refer to Section 4.2.6.2 and Section 4.2.6.5. The Soil Erosion Control Plan is included in the Final Reclamation Plan (Appendix E). The Final Reclamation Plan has been reviewed and approved by the BLM, USFS, and County in conjunction with the CRWQCB, the ARB, and the California Division of Mines and Geology. The applicant entered into a conservation agreement with the Pit Resource Conservation District in December 1988 with respect to district and SCS information on soils, vegetation, erosion control, and reclamation. This information has been utilized in planning and developing the erosion control measures and reclamation program.

21-2-2

Comment acknowledged.

21-2-1 We strongly encourage Lassen Gold to work closely with the Soil Conservation Service and local Resource Conservation District in planning measures for the prevention and control of soil erosion within the project area. We and the Resource Conservation District are concerned about the potential for accelerated erosion and potential for water pollution associated with the proposed project.

21-2-2 Improved livestock grazing management on the Anderson Ranch unit will create improved riparian habitat and demonstrate the benefits of improved livestock grazing practices . . . but will not provide any direct in-kind mitigation benefits.

We appreciate the opportunity to review and comment on the Draft Haden Hill Project, Lassen County, California EIR/EIS.

Sincerely,

D. W. Peterson for

Linden A. Brooks
Area Conservationist

cc: Oscar Hernandez, District Conservationist, Fall River Mills

Box 2133
Alturas, Ca. 96101
May 25, 1991

RECEIVED

MAY 30 1991

Lassen County Planning Dept.
707 Nevada Street, Room 236
Susanville, Ca. 96130

LASSEN COUNTY
PLANNING DEPT.

Dear Planners:

Thank you for sending the Draft EIS for the Hayden Hill Gold Mine. I have enclosed the fee for postage along with this comment letter.

I originally commented on the scoping document for the mine in a letter written on 12-18-89. Some of my concerns were addressed, some were not. As with that letter, my comments are my own, although information may have been obtained while working for the USFS as a summer bio tech.

A new bald eagle nest was found on Ash Creek in 1990. I do not know if these are the same eagles seen at Snider Waterhole and south of the project area. However, this now brings the closest bald eagle nest to ten miles. (Please correct 3.5.3.1.) I also have reports of bald eagles roosting and possibly nesting less than seven miles to the north. (These eagles were not in residence in 1990, so I could not check them out.) I agree that the eagles do not have nesting habitat in the immediate vicinity of the mine. I am concerned that they do use the area, however.

Partly because of the eagles, I believe that both the pregnant solution ponds AND the tailings process ponds should have netting. The tailings will have cyanide in the interstitial spaces up to 10 ppm (p.2-24). However, in Table 1, under the Wildlife section, the proposed action proposes to fence all ponds. Then it states that all ponds with cyanide solutions above 10 ppm will be netted. It seems that not netting the tailings process ponds is cutting it very close to the line. By the time cyanide solution leaks out of the tailings pile, and evaporation concentrates it, the process pond could easily exceed 10 ppm. Since waterfowl are known to be attracted to such ponds, especially in dry areas, and since bald eagles are known to feed on waterfowl, I would also consider the effects of biomagnification, play it safe, and net all the ponds.

I am not sure if the golden eagle nest that I mentioned (in SW SW Sec 29 T37N R10E) is the one you refer to as being "near Indian Springs." I do not buy the argument that mitigation is not proposed for golden eagles because they "are not declining locally or regionally, the opportunities for enhancing or creating replacement habitat locally are limited..." (p.1-7) First, golden eagles are protected from harassment or taking by the Bald Eagle Protection Act. Second, there are opportunities for habitat enhancement

22-1-3 Section 3.5.3 has been updated as noted. The USFWS requested consultation on the bald eagle (see Chapter 6.0). The Biological Assessment is on file with the BLM, USFS, and Lassen County and included in Appendix N.

22-1-4 CDFG and the Applicant, LGMI, have agreed upon a Wildlife and Habitat Management Plan. The Habitat Mitigation and Management Plan specifies what the applicant will do to mitigate wildlife and habitat impacts on a species by species or habitat basis. The wildlife mitigation Sections 4.2.5.4-4.2.5.5, and tables have been revised to reflect the contents of this Plan.

In Sections 2.2.3 and 2.2.8 of the Proposed Action, it is stated that all pregnant and barren solution ponds will be netted. Netting has proven to be effective in excluding wildlife at 95 operating Nevada mines. The tailings pond solution will be neutralized to cyanide concentrations not lethal to wildlife. Cyanide breaks down in ultraviolet light so it is not anticipated that evaporation will raise cyanide levels. Cyanide levels in the tailings pond will be monitored daily and detoxification systems adjusted accordingly.

22-1-5 The nest referred to in the Draft is the same one you reference. During the impact evaluation process, the impacts to golden eagles were considered to be not significant by agency wildlife biologists. The main impact to eagles, is the loss of 400 acres of foraging habitat. Golden eagle foraging ranges are generally several square miles (4-10). A created wetlands will increase foraging production and cover for the area and therefore will increase the small mammal population which will replace some of the lost food supply. Post-mining the pit will be modified to provide potential nesting habitat. The Wetlands Mitigation Plan is located in Appendix I.

22-2-1 The powerline will be constructed to minimize the potential for raptor electrocution.

22-2-2 If what is meant by the term "hacking" is the same as pit wall modification or sculpting, the Applicant proposes to blast unstable pit walls as mining progresses. Post-mining, the combination of blasted pit walls and benches should provide suitable raptor nesting habitat. Suitable nesting potholes will be created post-mining in the pit wall for prairie falcons. The wildlife mitigation Section 4.2.5.4 has been revised to specify mitigation measures. Also, please see the Habitat Mitigation Plan in Appendix I.

22-2-6 According to field data, there are six springs located within the Project boundary which demonstrate observable flow. Three of the unnamed springs located in Letterbox Canyon, display flow volumes not large enough for measurement. The other three springs are located along Hayden Hill Road. Daisy Dean Spring has an estimated average flow of 1 to 2 gpm. An unnamed spring in the same drainage has an estimated seepage rate of 1 gpm. Indian Springs has an estimated average flow of 3 to 5 gpm. These flow observations were made by KP in August of 1990. The flows from these springs subside to negligible volumes during the dryer summer months and in some cases dry up completely.

The flows from major springs in the Project area, such as Daisy Dean and Indian Springs, are not anticipated to be affected by Project operations. The springs are located in areas hydrogeologically separated from the minor seeps and springs around Hayden Hill.

The Applicant has also committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project to return these re-routed waters to the subsurface.

Wetlands are regulated by the Clean Water Act (CWA) of 1972. The CWA is administered by the Corps of Engineers and the Environmental Protection Agency (EPA) in a joint effort defined by a memorandum of understanding between the two agencies. The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. Refer to Section 4.2.4.

The anticipated impacts to springs and seeps in the Project Area are considered relatively insignificant, in light of observed seasonal flows, and lack of significant impacts to established wetlands.

Comment acknowledged.

22-2-7 Because of the number of variables involved in estimating leakage rates (hydrostatic pressure, size of liner puncture, location of leak, effects of differing permeabilities, etc.) there is no way of accurately quantifying leakage, rates of leakage, or the sensitivity of the monitoring system. Speculation of this nature is unwarranted in an EIS. The Waste Discharge Requirements from the CRWQCB will establish specific levels which are acceptable.

12-176

22-2-1 locally. Depending on the disposition of the Stratton and Letterbox sales, trees in either proposed cut units or "snag protection" units could be trimmed to make them more attractive structurally for golden eagles. Units could be thinned to allow for faster growth of potential nest trees. The power line on the access road could be kept low, and designed to minimize the chance of electrocution. The golden eagles in the area could be monitored, and construction of the access road and power line could be scheduled for the off-season (after Aug. 1) if the eagle nest is active.

22-2-2 Similarly, actions can and should be taken should prairie falcons not return to the cliffs after the mine is closed. After five years of non-occupancy following closure, I would encourage LGHI to institute hacking at the site.

The above actions may be in the gray zone as far as legally being required, but I would suggest you consider them as relatively inexpensive mitigation measures that will further your public relations.

It appears that you intend to adequately protect the Modoc Sucker through water quality measures and monitoring; I hope they are successful. I am also pleased that eight-foot fencing is going to be erected around toxic areas, which will hopefully keep deer from being poisoned.

I finished the South Adin Management Area old growth recommendations in September 1990. I would suggest you consult with Big Valley Ranger District. Unfortunately, I do not have the maps with me here, but I believe you will find some overlap with your wells and corridors, and possibly the access road widening and power line projects. Areas must also be selected to represent older seral stages; I don't know how far the district has gotten with that process.

I notice the expected water table drawdown estimate has changed since the scoping document. I am still concerned that springs may be affected. I suggest you provide developed water sources for wildlife at the spring sites or nearby if any of the springs should dry up.

Unfortunately, I cannot review your spill prevention plan since you have it on file in Susanville. I also note that regular trash is to be disposed of at landfills, with no mention of recycling. Since Modoc County is currently in a fiscal crisis over their dumps, I would suggest you recycle anything capable of being recycled.

In section 2.2.6.1, you state that any leakage from the heap leach area will be detected. I would like that quantified. How sensitive is this monitoring system? How many gallons would have to be leaking before it is noticeable? At what leakage rate does the EPA require repairs of the liners?

22-2-6

22-3-1 I notice no mention of coordination for the transportation corridors for the Stratton or Letterbox sales. How is this to be handled? Can timber be hauled through the mine area?

22-3-2 I would also encourage LGMI to contribute to repair of the infiltration problems in the Adin sewer system, especially if they intend to house many people at the proposed trailer park. If the trailer park does not proceed, I don't see much need to fix the sewer system as the population in Adin won't change much; there aren't many vacant houses or hook-ups available. I don't expect many people will buy houses in Adin as it will be difficult to sell them eight years later.

Thank you for the opportunity to comment. Please address future correspondence to the address above. I will be back in Modoc County in mid-June.

Sincerely,

Julie Rechten

Julie Rechten

22-3-1 Timber will not be permitted to be hauled through the mine area. Alternate routes must be selected.

22-3-2 LGMI does not intend to house anyone at the proposed Adin Trailer Court or anywhere else. Citizens will freely choose where they reside.

5-14-91

Concerning Haden Hill project

I feel very good About the
mining project. We need more
resources in our Area, more good
paying jobs our Family is 100%
behind you Amay go for it,

Thank you
Linda Lopez

RECEIVED

MAY 1 1991

ENVIRONMENT
SAN DIEGO, CA



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta GA 30333
May 29, 1991

24-1-2 Comment acknowledged.

RECEIVED

JUN 4 1991

LASSEN COUNTY
PLANNING DEPT.

Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, California 96130
Attention: Merle Anderson

Dear Mr. Anderson:

24-1-2 We have completed our review of the Draft Environmental Impact Statement (DEIS) for the Hayden Hill Project, Lassen County, California. We are responding on behalf of the U.S. Public Health Service.

We have reviewed the DEIS for potential adverse impacts on human health, and we believe related issues have been adequately addressed. We were pleased to note that both the heap leach and tailings impoundment are designed as no discharge facilities, and are designed with liners, leak detection, and perimeter dikes and ditches. We also note the planned emergency and monitoring plans to ensure the detection and mitigation of potential problems that might arise.

Thank you for the opportunity to review and comment on this document. Please insure that we are included on your mailing list to receive a copy of the Final EIS, and future EIS's which may indicate potential public health impact and are developed under the National Environmental Policy Act (NEPA).

Sincerely yours,

Kenneth W. Holt

Kenneth W. Holt, M.S.E.H.
Special Programs Group (F29)
Center for Environmental Health
and Injury Control

RECEIVED

DAVID BURNS

Attorney at Law

401 Clivia Center Drive West

Third Floor

Santa Ana, California 92701

(714) 667-0868

May 31, 1991.

MAY 31 1991

LASSEN COUNTY
PLANNING DEPT.

Mr. Merle Anderson
Senior Planner, Lassen County
707 Nevada Street
Susanville, CA 96130

Mr. John Mitchell
Director of Public Works,
Lassen County
707 Nevada Street
Susanville, CA 96130

Re: HAYDEN HILL ROAD, T. 36 N., 10 E., Section 6; Lots 3, 4, 5 & 8

Dear Mr. Anderson and Mr. Mitchell:

I am writing concerning the possible mutual liability exposure of Lassen County and my clients, the Napoles.

Approximately 1/2 mile of Hayden Hill Road is on the Napoles property. The County has a prescriptive right to use and maintain only, the road as it now exists. The County has no ROW, it cannot widen or alter the road beyond surface plowing. The road is a public road created by implied dedication.

The existing road is in poor condition and varies in width from 8 to 12 feet. On the subject property there is a hairpin turn, with a substantial elevation change.

The result of the increase in use of the Hayden Hill Road and the area being designated as a Significant Mineral Resource Area will be a change of character from a rural infrequently traveled road, to one which the EIR Report admits "an accurate estimate of traffic volume to and from the site is difficult to make at present".

The character change places an enormous burden of inspection and correction upon Lassen County and the Napoles, who live about a block from Disneyland and have owned their property for nearly 30 years.

EIR Table 2.2-4 estimates, among other numerous truck load TPD, an average of 7,124 gallons of diesel fuel trucked in per day for the life of the mine. During the construction and operating phases, the EIR Report estimates of TPD varied greatly depending on the number of personally-owned vehicles driven to the mine daily.

"Traffic cops" and turn outs will not be sufficient to mitigate the probability of injury to others. Inclement weather and darkness will further increase the travel risks.

25-1-2 Hayden Hill Road will be upgraded to provide an adequate road surface conforming to established design criteria. Designs have been submitted to the responsible agencies and can be reviewed there.

Comment acknowledged and directed to Lassen County. Please refer to Section 2.2.7.1.

25-1-7 The establishment of employee transportation programs as well as upgrading and maintenance of select roadways by LGMI will assist in the mitigation of transportation safety concerns. Please refer to Sections 2.2.7.1, 2.12.1.2, and 4.2.12.

Mr. Merle Anderson
Re: Hayden Hill Road, etc.
May 31, 1991
Page Two

Mr. John Mitchell

In light of the above, the Naples and this office would appreciate you keeping us up-to-date regarding any decisions Lassen County is considering regarding this section of Hayden Hill Road.

Thank you for your courtesy, cooperation and immediate attention.

Very truly yours,

David Burns
DAVID BURNS

DB/rw

Enclosures

2.3.3.5 Housing Alternatives

The option of on-site housing provided by LGMI was eliminated from further consideration. Unless a mine site is extremely remote, employees typically prefer to live in communities with existing infrastructures including public services, housing, employment for other family members, etc. If employees were to live at the Project site, the area would suffer much more severe environmental impacts. Housing employees at the site is environmentally, legally (not zoned for public housing), and economically undesirable.

2.3.3.6 Transportation

Since workers likely will be commuting from a variety of places, including Alturas, Susanville, and possibly Redding, the workers could provide their own transportation to and from the Project using individual vehicles as an alternative to the Proposed Action in which vans, and/or car pool services could be provided if demand is present. Use of private vehicles would result in increased daily traffic volumes on the Hayden Hill access road from 13-20 average daily trips (ADT) estimated for the Proposed Action to 100 ADT. Traffic would increase significantly on Highway 139 as well. Energy consumption, road dust, air emissions, impacts to wildlife and traffic volume would increase with this alternative. Therefore, this alternative was eliminated in the planning stages.

2.3.3.7 Fire Tower Alternatives

New Fire Lookout Site Location

During aerial reconnaissance of the area, five sites were selected as possible lookout alternatives by USFS and California Department of Forestry (CDFFP) personnel. These sites have been examined and are listed as alternatives eliminated from further study in the following discussion.

Some of these sites did not meet some of the basic criterion and were, thus, eliminated from detailed consideration. The rationale for their dismissal are as follows:

Lava Peak - T34N, R10E, Section 7: This site is located 12 miles south of Hayden Hill at an elevation of 6,613 feet, on private land. Lava Peak was the site of a former lookout that was removed from services presumably because of the viewshed overlap with Fredonyer Peak lookout. The existing Fredonyer lookout overlooks much of the Lava Peak viewshed, and the Gerig Burn area, a priority view site, is not visible from this location. These two points are contrary to the Management Objectives, thus this alternative was removed from consideration.

TABLE 2.2-4
REAGENTS, FUELS, AND BLASTING AGENTS

Area	Item	Estimated Annual Consumption	Delivery/Storage
Mine	ANFO	3,500 tons	Delivered: bulk, 35 t truckload. Stored: 100 t bins.
Crusher Mill	Lime	15,000 tons	Delivered: bulk, 35 t truckload. Stored: (2) 75 t bin at Mill, (1) 150 t bin at crusher
Crusher	Cement	20,000 tons	Delivered: bulk, 35 t truckload. Stored: 150 t bin.
Process	Sodium Cyanide	2,500 to 3,000 tons	Delivered: 21 ton truckload. Stored: outdoors on lined pad. 20% solution in two 25,000 gallon tanks.
Process	Antiscalant	200 tons	Delivered: truck, 5,000-gallon tanker. Stored: 3,500-gallon tanks near ponds and at mill site.
Process	Caustic Soda (50% NaOH)	500 tons	Delivered: Truck, 5,000-gallon tanker. Diluted to 20%. Stored: 25,000-gallon tank at mill.
Process	Hydrochloric Acid	275 tons	Delivered: truck 5,000-gallon tanker. Stored: 6,000-gallon tank at mill.
Process	Carbon	64 tons	Delivered: truck, 1,000-pound sacks. Stored: outside storage area.
Process	Flocculent	38 tons	Delivered: truck, 5,000-gallon tanker. Stored: 2,000 lb flo-bins.
General	Propane	617,000 gallons	Delivered: truck, bulk, liquified. Stored: Various 1,000-10,000 gallon tanks.
General	Diesel Fuel	2.6 mil gallons	Delivered: 6,000-gallon tankers. Stored: 4 above ground, bermed 8,000-gallon tanks on concrete pad.
General	Gasoline	115,500 gallons	Delivered in 6,000-gallon tankers. Stored: 1 above ground, bermed 10,000-gallon tank on concrete pad.

¹ Sodium cyanide will be transported to the site in dry bulk (flo-bins) as briquettes or other bulk system. Transportation will be arranged and controlled by the supplier per applicable transportation standards.

² Cement will be stored only if agglomeration of heap ore is required.

2.2.7 Ancillary Project Facilities

2.2.7.1 Access Road and Project Traffic

Project Traffic

During the construction and development phase, contractor employees will provide their own transportation to the site but will be encouraged to carpool at all times. Experience at similar operations has shown that car and van pools develop rapidly when commuting distances are lengthy. Parking will be provided at the site.

During the construction and operating phase, company employees will be transported to the mine in company vehicles. The Applicant will make arrangements for an appropriate parking area in Susanville and Adin/Alturas (if sufficient demand exists) where most employees will use company-owned vehicles for transportation to the mine. Other employees will ride to the mine in personally-owned vehicles.

An accurate estimate of traffic volume to and from the site is difficult to make at present. During construction, personal vehicle traffic likely will average 25 to 30 trips per day and commercial traffic five to 10 trips per day. Company provided transportation should reduce the traffic volume during the operating phase to 10 to 15 trips per day for personal vehicles and three to five trips for commercial vehicles.

Access Road

The main access road to the mine site will be Hayden Hill Road, a county administered road heading south from its intersection with California State Highway 139 (Figure 2.2-1). This road is in good to fair condition. However, upgrading is required to ensure safety, due to increased vehicular traffic during construction and operation and to accommodate public access around the mining operation. In order to widen the road to meet safety requirements, a right-of-way (ROW) would have to be acquired from the USFS and from a few private property owners whose property is traversed by the road. If it is not possible to acquire the necessary ROW through the private lands by agreement, it may be necessary for the Applicant to request that Lassen County exercise its powers of eminent domain.

Upgrading and maintenance will be closely coordinated with the Lassen County Department of Public Works. The access road will be widened to a 24-foot wide running surface to handle two lanes of traffic. The road will be straightened where practicable, smoothed, and gravelled where necessary to create an all-weather surface. Where the road is adjacent to drainages, berms will be constructed and emergency culvert closures will be provided to contain any spillages within the roadway. The road will be relocated around the Hayden Hill Project facilities to maintain public access to areas near the site. The location of the access road is shown on Figure 2.2-1.

plan major construction to improve capacity. The five-year plan includes three projects: 1) installation of a 40-foot-wide bridge on a new alignment on Clover Swale Creek between Canby and Alturas; 2) a left-turn lane at the Day Road junction at the western Lassen County line; and 3) widening a box culvert about three miles west of Alturas (Strude 1990).

3.12.5 California Highway 36

Part of this highway in Susanville is a four-lane road with shoulders that vary from no shoulder to ten feet in width; it narrows to a two-lane road with two lanes with eight-foot shoulders. About one mile of the road was rehabilitated a year ago and the rest is listed in the Caltrans plan, though as yet unbudgeted, for rehabilitation (Robinson 1990). Its surface is good and its bridges and culverts can carry full permitted weight loads (Richardson 1990).

The Concept level of service is D in the four-lane section and C in the two-lane section. The present level of service is called MI, or maintain and improve, equivalent to level of service F. A study is underway to realign Highway 36. This new roadway will probably not be built until consensus is reached between the City of Susanville, Lassen County, and Caltrans on the alignment. No expenditures to improve capacity are likely on the present alignment beyond adding turning lanes or signal lights, in part because the new alignment is being considered, and in part because priority has been given to widening Highway 395 south toward Reno. The highway receives class 1 maintenance in the winter, the highest level provided by Caltrans (Corford 1990).

3.12.6 County Road 422, Route A2

County Road 422 is a paved road with 10-foot lanes and narrow, soft shoulders. The surface of the road is badly cracked and the County is now filling the cracks, to prepare the road for sealing and coating with rock chips. The County considers the road to be in poor-to-moderate condition and plans to overlay and slightly widen the road in two or three years. The County has no recent count of traffic. The road has no weight restrictions. Two culverts at Willow Creek need to be enlarged to carry water adequately (Harvey 1990a).

3.12.7 Hayden Hill Road

The main access to the proposed Hayden Hill Project site will be the Hayden Hill Road. This road runs four miles south and west from California Highway 139.

The transportation planner for Lassen County's Department of Public Works describes the road as being in poor condition. He said the road varies in width from 8 to 12 feet, with no shoulder, no crown for

drainage, and no gravel or other surface. The road is bladed perhaps once a year and is not plowed in the winter. Although the County performs the little maintenance the road receives, the County does not own the ROW for the road. The road is a public road created by implied dedication. Instead, the County has a prescriptive right to use and maintain only the road as it now exists. Because the County has no ROW it cannot widen or alter the road beyond surface plowing. In order, to widen the road, ROW would have to be acquired from the USFS and from a few private property owners whose land is traversed by the road (Shoun 1990).

3.13 Recreation

The primary area of influence for recreation includes the Project site and alternative locations, water supply locations, the Willow Creek Campground, and the transportation corridors. Information concerning recreation uses on the Project site and vicinity were obtained from the USFS and BLM.

3.13.1 Project Area

There are no developed recreation resources in the Hayden Hill Project area. The only developed recreation resource in the nearby vicinity is the USFS Willow Creek Campground described below. Under current conditions, no improvements or establishment of recreational facilities are anticipated or warranted by demand levels. Current dispersed recreation uses in the proposed Hayden Hill Project area include the following:

3.13.1.1 Hayden Hill Town Site and Mining District

The Hayden Hill Mining District has historically been one of the most important mining areas in the region. The old Highgrade Mining District, near New Pine Creek and the Winters Mining District north of Adlin, are the only other notable historic mining areas within the BLM planning area (BLM 1983).

The mining district consists primarily of numerous old foundations and a cemetery. The abandoned mines present a safety hazard to people who enter them (Bouse 1990). Hayden Hill is not considered a destination recreation attraction; however, this historic mining site is identified on many area recreation and tourist maps and in many brochures, therefore it receives a certain amount of use from visitors who are recreating in the general area. There are no statistics concerning the numbers of visitors to Hayden Hill. Although there are several small gold mines near Adlin, the Hayden Hill historic mining district is a unique resource in the area (Bouse 1990; Teeter 1990).



Lassen County

CATTELMEN'S ASSOCIATION

P. O. BOX 811
SUSANVILLE, CALIFORNIA 96130

RECEIVED

MAY 23 1991

LASSEN COUNTY
PLANNING DEPT.

May 21, 1991

Lassen County Planning Commission
707 Nevada St.
Susanville, CA 96130

Dear Lassen County Planning Commission;

We would like to offer some comments on the EIS of the Hayden Hill Mining Project. We realize the mine represents a valuable economic resource and growth for Lassen County. Although, we are not opposed to its operation; the Parks family which has had a long standing cattle operation in the area, could be seriously impacted by the mine unless suitable mitigation measures are developed to protect their ranch.

Grazing impacts need to be addressed due to the upgraded roads and increased traffic, vehicle/cow collisions, insure processing fluids do not enter ground or water, and utilization of the allotment due to the increased noise and activity. Mitigations need to be taken to insure that the Park's cattle operation can continue at economic levels without reducing their AUM's due to the mine.

In terms of long term land use planning, the acceptance of the power supply alternative in which LGMI installs, owns, maintains, and removes the power lines after the project terminates is critical. Without this condition, the power line would be able to supply residences creating a cascading growth effect on this now rural, undeveloped land that is a valuable agricultural and wildlife resource. This ballooning growth would have its own impacts on Park's ranching operation and creating growth has impacts far greater reaching than the scope of the mine.

Thank you for consideration of these comments.

Sincerely,

Hannah Tangeman
Hannah Tangeman, President
Lassen County Cattlemen

26-1-1

Design features such as liner containment, leak detection and collection systems will minimize the potential for surface or ground water contamination.

If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste Discharge Requirements (WDRs) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the CRWQCB at public hearings. The general public may review these documents and provide comments prior to their adoption.

LGMI will also rely on the Spill Prevention Control and Countermeasure Plan (SPCC) (Appendix L) and the Emergency Response Plan (ERP) (Appendix L) to effectively respond to possible threats of surface and ground water contamination.

This provides three measures of protection and response to intercept possible contaminants before entering ground or surface water.

The establishment of employee transportation programs as well as upgrading and maintenance of select roadways by LGMI will assist in the mitigation of transportation safety concerns. Other possible impacts of the Project are discussed, with appropriate mitigation in Chapter 4.0.

The road will not be fenced but will have reduced speed limits (20 mph). Livestock movements should not be affected. The Power Supply Alternative has been identified as the agency's preferred alternative and likely will be required for Project approval.

26-1-2

27-1-1 Comment acknowledged.

RECEIVED

May 25, 1991

JUN 7 1991

LASSEN COUNTY
PLANNING DEPT.

Lassen County Planning Department
707 Nevada St. Room 236
Susanville, Ca 96130
Attn: Merle Anderson

Dear Mr. Anderson:

27-1-1

The following comments have to do with the EIR for the Hayden Hill Project. As a land and home owner on Highway 139 nine miles south of Adin, I have many concerns about this project. Foremost in my thoughts however, is the preferred alternative for electrical power being delivered to the Hayden Hill site. When I built my home several years ago, I investigated the possibility of acquiring power for my home. I was told by Surprise Valley Electric that the cost would be \$30,000, which I could not afford. Since that time I have been anxiously awaiting an opportunity for landowners in that area to cooperatively request the delivery of power to our homes. With the current proposal, it seems to me that existing home owners may have a right to request power from REA, or any other organization providing power along the corridor.

As a home owner and land owner, I want to be able to tap in to the power line. I believe it is my right to request service from a public utility, and I certainly intend on doing so if and when the power line should go in. Please consider my request that existing home owners along the corridor be allowed to secure electrical service as part of the preferred alternative to the Hayden Hill EIR.

Thank you.

Steve Main

Sincerely,

Steve Main
P.O. Box 123
Bieber, CA 96009
916-294-5582

Memorandum

To : (1) Douglas P. Wheeler
Secretary for Resources

(2) Merle Anderson
Lassen Co. Planning Dept.
707 Nevada Street, Room 216
Susanville, CA 96130

Date: May 22, 1991

Subject: Draft EIR for the
Hayden Hill Gold
Venture,
SCH# 89020079

From : Department of Conservation—Office of the Director

The Department of Conservation has reviewed the Draft Environmental Impact Report (DEIR) for the proposed Hayden Hill Gold Venture mining operation, which will encompass 1,659 acres of land in Lassen County. We have comments on Williamson Act issues associated with the project, and on reclamation issues and the proposed reclamation plan. (DEIR, p 3-91.) The primary current use of these lands is grazing. Grazing will be precluded within the project site for the proposed eight-year life of the project. (DEIR p 4-110.) Approximately 658 acres of this area are private lands subject to the California Land Conservation (Williamson) Act. (DEIR, p 3-93.) According to information presented to the Department by the project proponents at a meeting on April 2, 1991, lands currently restricted within the agricultural preserve would be used for the following specific uses: 131 acres for tailings ponds, 90 acres for cyanide heap leach pads, 7 acres for solution ponds, 20 acres for topsoil storage, 15 acres for a waste dump, and 15 acres for the mining pit itself.

The Department is directed to provide guidance regarding the policies, purposes, and implementation of the Williamson Act (Government Code 51206).¹ The over-arching purpose of the Act is to "maximize the preservation of agricultural land and discourage the premature conversion of such land..." (County of Orange v. Kenneth Cory (1979) 97 Cal.App.3d 760.). Also, the Department is responsible for reviewing project impacts on the Williamson Act, agricultural lands and the soil resources, as part of the CEQA review comment process. CEQA Guidelines identify any project that may result in the loss of more than 100-acres of land under a Williamson Act as a project of Statewide Significance. (CEQA Guidelines, Section 15206 (b)(3)). Because this project will adversely impact agricultural lands, soils and, specifically, a Williamson Act contract parcel, we have the following comments.

28-1-3 The DEIR is inconsistent in its discussion of Williamson Act restrictions which will need to be addressed in order to proceed

¹ All references to the "Act" hereafter are to the Williamson Act unless otherwise noted. All references to code sections hereafter are to the Government Code unless otherwise noted.

28-2-1 See response to Comment 28-1-3 above.
28-2-3 See responses to comments 28-3-3 and 28-3-4 below.

Mr. Wheeler/Wr. Anderson
May 22, 1991
Page 2

28-2-1 With the project. The DEIR states that "the Proposed Action may require cancellation of a portion of the Williamson Act contract if the State determines that mining uses are not compatible with uses of agricultural preserve lands." (DEIR p 4-110, see also, p 6.) However, Table I, entitled "Summary of Potential Effects and Mitigation Measures" recognizes the project's potential impact on "Agricultural Reserve Lands", yet suggests that this impact will be "mitigated" by reclassification of these lands by the county to make mining a "compatible use." It should be made clear in the DEIR that "reclassification" will not effect the project's compatibility with the Williamson Act.

The Attorney General has expressed apprehension that loose definitions of compatibility would result in "a preferential tax exemption for industry under the guise of limiting the use of agricultural land." (47 Ops. Att'y Gen 171, 179 (1966)). The Attorney General had therefore concluded that non-farm "compatible" use should be taxed as if no restrictions applied. (Ibid). However, the subsequent passage of Article 13, Section 8 now requires a use based assessment for all contracted lands. Hence, the only current means of avoiding the problem pointed out by the Attorney General in May of 1966, mainly preferential taxation of non-farm enterprises under the guise of Williamson Act contracts, is to adopt a rigid and narrow definition of "compatibility".

28-2-3 The Department's generalized view is that mining which significantly impairs the agricultural viability of a contracted parcel is not a compatible use.² As one court has observed, a Williamson Act contract represents a bargained for exchange, wherein land is restricted to agricultural use for at least 10 years in exchange for a tax preference. (County of Marin v. Assessment Appeals Board (1976) 64 Cal.App.3d 319, 322.) The Attorney General's Office has opined that the "chief benefit" realized by the government from Williamson Act contracts is "the preservation of agricultural land." (54 Ops. Att'y Gen. (1971) 90, 92.) If the nature and/or scale of a proposed mining operation are such as to significantly deprive the government of the benefit of this bargain, such mining would violate the underlying contract. Mining is therefore compatible only the extent and under conditions which don't result in impairment of agricultural lands. This compatibility must be measured by both

² A relevant standard of compatibility is embodied in the Act's provisions dealing with minimum parcel sizes. Sections 51222 and 66474.4 prohibit division of contracted lands into parcels too small to "sustain agricultural use." The gist of Sections 51222 and 66474.4 is to preserve the agricultural potential of contracted lands.

28-3-3

The discussion on the land use impacts to Williamson Act lands must be read in conjunction with the discussion of impacts on rangeland uses (Section 4.2.9.4), soil (4.2.3), vegetation (4.2.4), and the revised Reclamation Plan.

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the impact of such activities on the subject parcel as well as neighboring parcels within an agricultural preserve.³

In a recent DEIR prepared for an aggregate mine operation in Ventura County, analysis of the project relative to compatibility with the Williamson Act lead to conclusion consistent with the arguments presented above, that mining of this scale is not compatible with the Act. In the Ventura DEIR (Major Modification No. 3 to CUP-1367 - Expansion of Mining Area - Gillibrand Aggregate Mine, April 1991 (excerpt attached)) the solution recommended was "a partial cancellation and/or non-renewal" of the contract.

28-3-3 The DEIR's discussion of Williamson Act lands does not provide sufficient detail for an adequate analysis of the magnitude and duration of the project's impact on the agricultural preserve. The Final EIR should therefore focus on the specific acreage within the present agriculture preserve dedicated to various uses. For each specific use, the duration of disturbance and potential for reclamation should be set forth.

28-3-4 The FEIR should assess the use of the preserve for grazing land and open space purposes and supply information regarding the value of the land for grazing operations, the carrying capacity of the grazing land, and the type of grazing operations for which the agricultural preserve is used. The FEIR should also specifically discuss how the land will be returned to its original overall level of forage productivity, including discussion of water and nutrient management for increased yields.

The DEIR should also address farmland conversion impacts, such as:

³ The Legislature recently bolstered the Act's guidance of local decisions on compatible land uses. In 1986, the Senate Floor Analysis of SB 1506 (Stats. 1986, c. 607) stated:

"The Act also allows counties and cities to designate additional compatible uses. The Task Force was concerned that some land owners were misusing the Williamson Act's tax benefits by using contracted land for other than agricultural operations..." (emphasis added).

As a result, Section 51220.5 was added, which specifies that contracted lands should not be used for a non-agricultural operation which "hinders or impairs agricultural operations."

28-3-4

Rather than debate the compatibility of mining on agricultural preserve lands, the property owner has requested and the County is entertaining cancellation of the Williamson Act contract as it pertains to approximately 658 acres which would be disturbed by mining activities. This is part of an existing 1932 acre agricultural preserve.

Pursuant to California Governmental Code Section 51282, the County proposes to make findings that the cancellation is in the public interest for reasons including local economic and employment factors and the development of unique mineral resources. It can also be noted that conversion of land use from rangeland to the mining of significant gold and silver resources is not, in this situation, likely to result in the removal of adjacent lands from agriculture use, or result in discontinuous patterns of urban development since the cause for conversion (ie. the mineral resource) is unique to the site.

As described in the Draft EIR/EIS, the use of these non-prime agricultural preserve lands is grazing and open rangeland. Based on the use of BLM lands in the Project area (518 acres at 57 AUM's), the carrying capacity of the affected Williamson Act lands (658 acres) would be approximately 72 AUM's.

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- 28-4-1 - The type, amount and location of grazing land conversion that would result from implementation of the mining operation.
- The impacts on current and future grazing operations.
- The cumulative and growth-inducing impacts of the project on grazing land in the surrounding area.

28-4-2 However, even without such detailed information, it is clear on the face of the DEIR that 658 acres of land subject to a Williamson Act will become unavailable for continued agriculture for the duration of the project. The DEIR states that the mining operation will last approximately 8 years. (DEIR p 4.) The Department notes that the project proponent's public relations pamphlet (paragraph four under "Project Description") suggests the duration of the project could be much longer. The question is thus, does the exclusion of agriculture from 658 acres under a Williamson Act contract for a period of at least 8 years constitute an incompatible use? The 8 year period constitutes nearly all of the remaining contract term, should the affected contract be immediately nonrenewed. Government Code § 51246. In a temporal sense, the cessation of agriculture and loss of open space values for this eight year period represents a significant diminishment of the public's bargained for exchange in the particular Williamson Act contract. Therefore, the Department cannot consider the project as proposed to be a compatible use of the subject parcel.

It is the Department's general view that a permanent, or temporary, activity or use which significantly impairs the agricultural viability of a contracted parcel is not a compatible use.⁴ In addition, since the primary purpose of the Williamson Act contract is to protect agricultural and open space values, to allow a large portion of a contract to be used for an activity which would diminish such values, would certainly not be consistent with the purpose of a Williamson Act contract.

Reclamation

1. The DEIR/DEIS states that approximately 86 million tons of waste rock will be generated by the project. This waste rock will be dumped on the northern slope of Hayden Hill

⁴ A relevant standard of compatibility is embodied in the Act's provisions dealing with minimum parcel sizes. Sections 51222 and 66474.4 prohibit division of contracted lands into parcels too small to "sustain agricultural use." The gist of Sections 51222 and 66474.4 is to preserve the agricultural potential of contracted lands.

28-4-1

The road will not be fenced but will have reduced speed limits (20 mph). Livestock movement patterns should not be affected. Please also refer to Section 4.2.9, and Table 4.9-1.

28-4-2

It is noted that the Department of Conservation has taken the position that mining as proposed would constitute an incompatible use. The County is entertaining the request for cancellation of the Williamson Act contract with the appropriate findings.

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creating a 750 foot high terraced slope which has an overall slope angle of approximately 3 horizontal to 1 vertical (3H:1V) with intermediate slopes at the angle of repose of approximately 1.3H:1V. The waste rock dump will cover a surface area of approximately 206 to 258 acres, depending on the benching design selected. The following are several items of the waste pile design and monitoring that need additional information and clarification.

28-5-2

a. Section 3502(b)(3) of Article 1, Subchapter 1, Chapter 8 of Title 14 of the California Code of Regulations (CCR) requires that whenever the final slopes approach the critical gradient the reclamation plan shall contain an engineering analysis of the slope stability. The DEIR/DEIS and reclamation plan briefly discuss the waste pile slopes, but do not provide any specific analysis on the stability of the final slopes. Because these slopes are at the angle of repose, surficial failures should be anticipated. Mr. Jeff White, Lassen Gold's environmental coordinator, has indicated in discussions that an engineering stability analysis and engineering design for the waste pile dump have been performed. Mr. White also indicated that the full bench alternative is now the preferred alternative for the waste pile slopes. We agree that fully benched design is the preferred alternative, although additional geotechnical engineering analysis is needed to demonstrate that the full benched design is feasible and stable. Therefore, the DEIR/DEIS should be amended to provide an indication of the results of the engineering design and stability analysis of the waste pile and discuss maintenance requirements for the intermediate and final slopes. The geotechnical report presenting the stability analysis should be appended to the reclamation plan so that it can be reviewed by our Division of Mines and Geology (DMG).

28-5-3

b. The DEIR/DEIS states that preliminary testing of the waste pile rock indicates a low potential for generating acid drainage. However, ongoing testing and monitoring of the waste rock will be performed to demonstrate that the waste rock is a Group C waste as defined by California Code of Regulations (CCR), Title, 23, Division 3, Chapter 15, Section 2571(b)(3). The DEIR/DEIS states that if portions of the waste rock are found to have a greater than low-potential for generating acid, then the waste will be encapsulated. However, no specifics are given on the method or location of the encapsulated waste, the monitoring requirements, or the potential impacts on the project

28-5-2 See Section 2.2.8.14 which addresses slope stability concerns.

28-5-3

The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. LGMI has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan developed for the Project provides a means by which LGMI can demonstrate geochemical consistency between the pre-mining waste characterization data and the actual wastes produced by mine development. The Geochemical Sampling and Contingency Plan is designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the Project Mitigation Compliance Program prepared for Lassen County in December of 1990, but should be dynamic and subject to revision as data and experience with the plan is gained. The Contingency Plan is included in Appendix M.

If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality. The mechanism by which the CRWQCB will enforce the State requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDRs) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the CRWQCB at public hearings. The general public may review these documents and provide comments prior to the adoption.

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28-6-1

site and duration of mine reclamation. Section 2772(h)(1) of Surface Mining and Reclamation Act of 1975 (SMARA) requires that the reclamation plan describe the manner in which contaminants will be controlled and mining wastes disposed. The construction of an isolating cell for acid generation waste rock within the larger waste pile will be difficult and potentially infeasible.

28-6-2

Therefore, the DEIR/DEIS should include a discussion of the potential impacts and alternatives for encapsulating and monitoring waste rock that may have the potential for generating acid drainage. This should include a discussion of the general design of the encapsulation structure(s) and the procedures and test methods for identifying acid generating waste rock. In addition, a statement should be made in the reclamation plan that the operation will be in compliance with the Waste Discharge Requirements issued by the Central Valley Regional Water Quality Control Board. If there are substantial changes in the method for disposal of the waste rock, an amendment to the reclamation plan may be necessary.

28-6-3 c.

Section 3503(d) of CCR requires that disposal of mine waste rock shall not restrict natural drainage without suitable provisions for diversion. The proposed disposal of the waste rock will block portions of the drainage ravine on the western side of Hayden Hill. Neither the DEIR/DEIS, nor the reclamation plan provide any details on the extent of the impact of the mine waste dump on the drainage or methods of diversion. Mr. White has indicated that a french drain will be placed beneath the portion of the waste pile covering the ravine. In addition, several of the figures in the DEIR/DEIS show an east-west trending diversion channel near the base of the waste rock pile slope, but the purpose of this channel is not clearly stated. Therefore, the DEIR/DEIS and the reclamation plan should be amended to discuss: (1) the potential impacts to the western ravine; (2) the design of the french drain; (3) the maintenance methods for preventing clogging of the french drain; (4) the purpose and maintenance of the east-west diversion channel; and (5) the alternative diversion structures, if necessary.

d.

The waste pile will have several 200-foot wide terraces spaced at vertical distances of approximately 100 feet. These terraces will catch and divert runoff but neither

28-6-1

Section 3.7 of Appendix B of the revised Reclamation Plan (Appendix E) includes the methods of managing pollutants on site. The Emergency Response Plan (ERP) and Spill Prevention, Control, and Counter measure Plan (SPCC) also address these issues (Appendix L).

28-6-2

A Geochemical Sampling and Contingency Plan is included in Appendix M. This Plan discusses the identification and handling of potentially acid generating materials. Sections 4.10, and 4.14 of the revised Reclamation Plan (Appendix E) include statements to this effect that this Project will be in compliance to CRWQCB requirements.

28-6-3

Sections 4.4.3 and 4.4.4 of the revised Reclamation Plan (Appendix E) include a detailed description of the drainage, sediment control measures and maintenance required for the waste rock dump.

Mr. Wheeler/Mr. Anderson
May 22, 1991
Page 7

28-7-1 the DEIR/DEIS, nor the reclamation plan clearly indicates the direction of runoff. Section 3503(e) of CCR requires that grading and revegetation minimize erosion and convey surface runoff to natural drainage courses or interior basin for water storage. Therefore, the DEIR/DEIS and the reclamation plan should be amended to show the direction of surface water runoff both during project operation and reclamation. If drainage basins or sedimentation basins are part of the design, they should be clearly identified, including the runoff volume and sources of runoff to each basin.

2. 28-7-2 The Hayden Hill project will excavate an open pit mine over an area of approximately 176 acres with a total depth of approximately 650 feet. The pit slopes will be at an angle of 45 degrees with 20-foot high benches. As with the waste pile, an engineering stability analysis is required to demonstrate that the final slopes are stable. While the actual nature of the bedrock and the orientation of planes of weakness in the final slope can not be accurately predicted, preliminary analysis of slope stability should be made with the current data. The DEIR/DEIS and the reclamation plan should discuss areas of potential stability problems and describe monitoring plans, such as periodic inspections, needed to identify and correct stability hazards.

3. 28-7-3 The proposed design of the open pit will direct surface runoff to the bottom of the pit. The DEIR/DEIS indicates that accumulated pit water may require treatment prior to discharge. The volume of surface runoff that is anticipated in the pit is not provided. The requirement for long term operation of a water treatment system would significantly impact the reclamation of the pit and the standards for evaluating the success of reclamation. Therefore the DEIR/DEIS and the reclamation plan should provide additional information on the potential impacts of a water treatment system for the pit surface waters. In particular, the long term requirements and responsibilities for operation, maintenance and monitoring of the treatment plan and associated discharges should be described.

4. The DEIR/DEIS states that the project requires approximately 1000 gallons per minute of water for operations. This water will be supplied through several ground water wells located west and north of Hayden Hill. The DEIR/DEIS discusses the impacts of this ground water pumping on the shallow and deep aquifer adjacent to the project site. Some of the information presented in the DEIR/DEIS on ground water

28-7-1

Sections 4.4.3 and 4.4.4 of the revised Reclamation Plan (Appendix E) include a detailed description of the drainage, sediment control measures and maintenance required for the waste rock dump.

28-7-2

See Section 2.2.8.14 which addresses slope stability concerns.

28-7-3

Accumulation of surface water and groundwater in the pit is not anticipated, however, the following mitigation measures may be necessary in the unlikely event of surface water ponding.

Any water accumulated in the pit would be used in dust suppression activities or used for mill make-up water.

Should chemical sampling of pit water indicate a significant degradation of water quality, a pit dewatering system would then be designed and installed.

Accumulated pit water may require treatment to established regulatory standards prior to discharge to natural drainages.

A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit. These mitigation measures were presented in the Draft EIR/EIS and are included in the final.

28-8-2

A regionally persistent confining layer overlies the regional groundwater (deep aquifer) system. Moreover, the results of hydrogeologic investigations (pump tests) have indicated that the system is hydraulically confined in the Project area. Thus the recharge area is most likely located some distance from the Project site. Please refer to Section 3.6.3 for a discussion of the hydrogeology of the Project area.

Impacts to the regional aquifer system are discussed on in Section 4.2.6.2. Drawdown estimates for the region are presented in the text.

As stated in Section 4.2.4.2, a total of 6.55 acres of wetlands, 80 lineal feet of permanent stream channel and 1,315 lineal feet of intermittent stream channel would be impacted by the Proposed Action. These impacts are considered long-term for habitat value and short-term for cover value since reclamation would include these areas. A mitigation plan for impacts to wetlands has been prepared by the Applicant in conjunction with the Corps of Engineers 404 Permit and is included in Appendix I.

Wetlands are regulated by the Clean Water Act (CWA) of 1972. The CWA is administered by the Corps of Engineers and the Environmental Protection Agency (EPA) in a joint effort defined by a memorandum of understanding between the two agencies. The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. The proposed mitigation plan will create approximately 18.5 acres of seasonally inundated wetlands. See Section 4.2.4.

The Applicant has also committed to re-routing springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used, downstream of the Project to return these re-routed waters to the subsurface.

Calculations were checked and revised accordingly. The basins examined should have been 25 and 16 square miles, not 4 and 5 square miles. The resulting rate of recharge for the Preston Canyon and Bunselmeier Spring areas is estimated at 3,600 to 4,100 ac-ft/yr and 5,600-6,400 ac-ft/yr, respectively. Thus the net recharge at a pumping rate of 1,600 ac-ft/yr is 2,000-2,500 ac-ft/yr and 4,000-4,800 ac-ft/yr, respectively. Thus no overdraft is expected.

28-8-3

resources appears to conflict. The following discussion addresses specific items that need clarification.

a. The DEIR/DEIS describes the hydrogeologic setting of the project site as having a shallow aquifer which is separated from the deep regional aquifer. No impacts to the springs and seeps in the area surrounding the project site are anticipated from pumping the deep aquifer. However, the conclusion that there is little or no hydraulic interconnection between the shallow and deep aquifers appears to conflict with the discussion of recharge of the deep regional aquifer.

The DEIR/DEIS states that extraction of approximately 1600 acre-feet per year of ground water for plant operations will be balanced by recharge from precipitation. The method through which infiltration of precipitation reaching the deep ground water aquifers is not clearly discussed. Nevertheless, the pumping of the deep regional aquifer implies that they are hydraulically separated. This raises the question about the method of recharge to the deep regional aquifer. Specifically, how does the precipitation infiltrate to the deep regional aquifer and bypass the shallow aquifer? Thus additional clarification of the ground water regime of the project site is needed on the water balance and the potential impacts of pumping on the springs and seeps. If there is a potential for impacting individual springs or seeps, then additional discussion on the resource value of the springs or seeps is warranted as well as specific methods for monitoring the potential impact and possible mitigation measures, if necessary.

b. Calculations presented in the DEIR/DEIS on the amount of ground water recharge do not agree with estimates made by DMG. Specifically the annual recharge for Bunselmeier Spring is estimated to range from 1650 to 1900 acre-feet. DMG calculates the annual infiltration volume over a five square mile area, with 30 percent of the 14 to 16 inches of annual precipitation infiltrating into ground water, to range from 1120 to 1280 acre-feet per year. DMG calculates a similar difference in the potential recharge for the Preston Canyon area and estimates annual recharge of 896 to 1024 acre-feet per year. This difference in potential recharge would result in overdraft of the deep regional ground water basin since approximately 1600 acre-feet per year will be extracted. Therefore, the DEIR/DEIS

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28-8-2

28-8-3

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28-8

28-9-2 Based on permit requirements, groundwater monitoring will continue during a post-closure period, or until permit requirements are satisfied as determined by the CRWQCB.

Section 4.2.6.2 discusses impacts to water resources and the monitoring following closure which will be done. The revised Reclamation Plan (Appendix E) also discusses post-closure monitoring.

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and the reclamation plan should be amended to provide clarification of the method of calculating the volume of recharge and, if necessary, discuss the impacts of the potential overdraft of the deep regional aquifer and the shallow aquifer.

28-9-2 5. Numerous wells have been constructed at the project site to monitor the ground water. These wells will be used throughout the active life of the project and presumably during the closure and post-closure periods. However, the DEIR/DEIS and the reclamation plan do not provide data on the duration of ground water monitoring during closure and post-closure, or discuss the timing of the reclamation and abandonment of these monitoring wells. Since it is likely that monitoring of ground water for impacts from the waste rock dump, tailing pond and heap leach pile may continue for a number of years after mining has stopped, the DEIR/DEIS and the reclamation plan should address the issues associated with reclamation years after the initial closure of the project is completed.

28-9-3 6. A primary impact of the proposed project is the potential to generate significant volumes of eroded sediment from the waste rock pile, soil stockpiles, heap leach pile, and general soil disturbances in the operation areas. The DEIR/DEIS and reclamation plan provide a general discussion of the policies and methods for controlling sediment erosion. The results of sedimentation modeling indicate that there will be a slight increase in runoff and sediment yield in Preston Canyon during post-mining. However, specific data are not given on the volume of sediment expected, the adequacy of the sedimentation basins to mitigate erosion impacts, the anticipated duration of sedimentation and the time frame necessary for monitoring and mitigating erosion impacts. Therefore, the DEIR/DEIS and the reclamation plan should be amended to include a discussion of the potential impacts from erosion, specific methods for monitoring erosion, the duration of post-closure monitoring, and mitigation measure to be undertaken during post-closure and reclamation, such as cleaning of sedimentation basins.

28-9-4 7. In general, the environmental impacts of Hayden Hill mining project are complex. Throughout the operation and post-closure period of the project numerous inspections and monitoring activities will be undertaken. The overlap of several government agency jurisdictions will result in a complex monitoring and reporting schedule. In order to reduce the overlap of monitoring and reporting requirements, we recommend that as part of the mitigation monitoring plan,

28-9-3

During Project operations, all sedimentation control structures installed in on-site drainages will be checked for blockage bi-monthly. Any debris or sediment that inhibits the proper function of the surface drainages will be removed immediately by the Applicant.

Reclamation activities shall include interim and final control of slopes on cuts and fills, plus revegetation to control surface erosion, sheet flow, and sediment loading. After operations cease, the functional ability of all sediment control structures will be monitored and maintained on a semi-annual basis, or as appropriate to satisfy regulatory criteria. Monitoring and maintenance operations are anticipated to continue until water quality can be shown to meet NPDES permit requirements with no additional treatment. At this time the NPDES permit will be terminated. The CRW/QCB will ultimately stipulate when and if sediment ponds are reclaimed. Please also refer to Sections 4.2.6.2, 4.2.6.3, and 4.2.6.5. Also, refer to the sediment and erosion control plan included in Appendix E.

28-9-4

See Appendix D. The Mitigation Compliance Program describes the monitoring and reporting requirements, including timing, data collected, and reporting methods.

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a table be created which identifies the monitoring requirements, and timing of data collection and reporting for the various required monitoring. This table should identify whether a monitoring activity will continue during post-closure and reclamation, and identify monitoring activities that will only be undertaken during post-closure and reclamation.

8. The comments for surface mining reclamation plan approval in Table 1.6-1, Preliminary Summary of Permits and Approvals Required for the Hayden Hill Project, include the statement that a bond not-to-exceed \$500/acre will be required. This figure, a maximum of \$500/acre, is not included in the Surface Mining and Reclamation Act of 1975 (SMARA) and should be deleted from this table. Bonding should be in an amount adequate to reclaim all surface disturbances in accordance with the approved reclamation plan, which for this project should greatly exceed \$500/acre. This fact is documented, in part, in the DEIR/DEIS (Page 2-43) where a figure of \$2,665/acre is proposed by Amax Gold Inc.

9. The bond amount proposed by Amax on Page 2-43 of the DEIR/DEIS (\$2,665/acre), does not include the costs for "dismantling and removing buildings, and structures, [or] closure and post-closure monitoring," since these items are considered "operational or maintenance costs." Dismantling and removing structures, and closure and post-closure maintenance and monitoring are all aspects of reclamation, and should, be included in the bond estimation. On Page E-29, the reclamation plan refers the reader "to the 'premises' section of the cost sheet for the rationale" of the proposed bond figure. This sheet was not included in the DEIR/DEIS. We can not comment on the proposed bond amount without this information.

10. The figures included in Table 3.4-1 and Section 3.4.2, Vegetation Type Descriptions on Pages 3-19 to 3-25, put forth the data used later in the document for developing performance standards. While these data are adequate for an DEIR/DEIS, they are incomplete and biased by the sampling methods; therefore, they should not be used for determining revegetation performance standards as proposed on Page 4-31.

The DEIR/DEIS does not present a description of the sampling methods; however, reference is made to a 0.25 m² plot size for density, frequency, and cover estimates for the Grassland, Upland Shrub, and the Jeffrey Pine/Mountain Shrub types. A plot size of 0.25 m² for sampling the grasslands is probably appropriate, but this plot size is not appropriate for shrubland and forests. Measurements of

28-10-2 Table 1.6-1 has been revised to reflect this correction.

28-10-3 Section 4.14 of the Reclamation Plan (Appendix E) includes a breakdown of the reclamation costs. The bond amount has been calculated to cover all aspects of reclamation.

28-10-4 Section 4.9 of the revised Reclamation Plan (Appendix E) includes methods of analysis for success of the reclamation. The criteria for vegetative success is based on a comparison to similar, existing, disturbed and undisturbed areas.

28-10-5 Plot sizes varied for differing vegetational growth form. The details of the observation methods are included in the report prepared by Bio-Resources titled "Vegetation and Wildlife at Hayden Hill, California", dated October, 1990. This report is available for review at The Lassen County Planning Department.

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density and frequency are affected by the size and shape of the plot, with this effect becoming most pronounced with small (e.g. 0.25 m²) circular plots (Greig-Smith 1964). Plot size recommendations for shrublands are 4m²-16m², and 10m² or greater for types dominated by trees (Mueller-Dombois and Ellenberg 1974).

The performance standards for reclamation should be based on comparative studies, using pre-project values or, preferably, representative areas that are relatively undisturbed (grazing has disturbed the area to some degree) and that will not be disturbed by the operation as "controls". The standards for revegetation would then be stated as a percentage of the control area and would be closely tied to site-specific conditions. For example, the recolonization of the abandoned leach pad demonstrates that cover will approximate original values within four to five years. For shrublands, then, one standard would be to achieve 100% of the cover of the control area within five years. If the chosen control area has 35% cover, then the standard would be 35% cover in five years. This method would result in non-arbitrary performance standards that are site-specific and closely tied to the vegetation and climate of the region. However, this method will require additional field work.

Monitoring of revegetation elements for this site should be done for a minimum of five growing seasons following implementation or until the performance standards are met.

11. The DEIR/DEIS states on Page 4-31 that revegetation monitoring will be based on plant cover using "ten randomly placed, one square meter samplings per acre." On Page E-29 (Reclamation Plan), the plan states that monitoring will be based on cover measured in "ten plots of one square meter...for each vegetation type." The method of plot placement suggested on Page 4-31 would result in approximately 9,000 plots, while the method proposed on Page E-29 would result in a total of 40 plots. Both of these suggestions are not appropriate, one being excessive and the other inadequate.

The number of plots needed for each area or vegetation type should be determined by the amount of variability within that type and the spacing of the individual plants. The number (sample size) should be large enough to be able to detect statistically significant differences between undisturbed areas (controls) and revegetated areas (treatments). For this purpose, a minimum of 20 plots and a maximum of 50 plots for each treatment within each

- 28-11-2 The Reclamation Plan (Appendix E) has been revised to include monitoring requirements based on comparative studies of areas similar to those being reclaimed. See Section 4.9 of the Reclamation Plan.
- 28-11-3 The monitoring of revegetated areas will continue until the success criteria presented in the revised Reclamation Plan (Appendix E) are met. This may require far more than five years or a little less. We believe the important factor is reaching the criteria, not setting time limits which may be excessive or insufficient.
- 28-11-4 Section 4.9 of the revised Reclamation Plan (Appendix E) includes methods of analysis for success of the reclamation. The number of plots for cover will be 20 per reclaimed unit. The number of plots for species richness and density is based on species area curves.

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vegetation type is probably appropriate. The exact figure should be determined for each vegetation type based on type variability and on standard methods such as those suggested in Mueller-Dombois and Ellenberg 1974.

The other issues raised in reference to this section are the plot size and the parameter being assessed. As mentioned above, plot size should be based on the species distribution and structural characteristics of each vegetation type. A plot size of one square meter may be too large for a dense grassland, and too small for a shrubland. The appropriate plot size for each vegetation type could be easily determined with minimal additional sampling.

Cover is a very good parameter to use for measuring revegetation success. However, cover measurements do not give any indication of diversity or similarity to existing vegetation types. In addition to cover, species richness (one component of diversity) should be calculated for the recovering areas and compared to areas not impacted by the project (to the controls previously suggested). The degree of similarity between revegetated areas and areas not impacted by the project should be calculated using a similarity index. An average survival rate for trees planted should be determined and compared to a pre-determined minimum survival performance standard.

The aforementioned proposed changes to the sampling methods and sampling design are based on standard practices used to assess revegetation success. Similar methods are being required for other mining operations in California. Since the release of the bond for this project will be, at least in part, based on the outcome of revegetation of the disturbed site, it is imperative that the process of assessing this outcome be non-arbitrary, repeatable, and objective.

12. A description of the vegetation of the wetlands that will be impacted by the project is not included in the DEIR/DEIS. Section 3.4.2.5 Wetlands on Page 3-25 includes a misplaced paragraph that describes the vegetation of the natural grassland, not the wetlands. In addition, the vegetation of the seeps that may be affected by the excavation should also be described in the DEIR/DEIS.

The vegetation of the impacted wetlands should be described for use in replacing (mitigating) those wetlands. The wetland mitigation plan should, when developed, be included in the final Reclamation Plan. In addition, the vegetation of the seeps that may be affected should be quantified for

28-12-6 Sections 3.4.2.5 and 4.2.4.3 have been revised to include a description of the wetlands vegetation and the mitigation plan for wetland disturbance, respectively. The description of the wetlands vegetation in Section 3.4 of the EIR/EIS has been revised.

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purposes of monitoring for potential adverse effects on these valuable habitats due to drawdown caused by the mining operation.

13. The DEIR/DEIS states on Page 5-12, Policy 3 that the County and DMG shall "encourage revegetation with native vegetation similar to existing vegetation, unless this is infeasible. . . ." Revegetation with native vegetation is obviously feasible for this site, based on observations of road cuts, grazing effects, and previous mining disturbance (especially the abandoned leach pad) within the Hayden Hill Resource Area. However, the seed mixes suggested in the Reclamation Plan (Appendix E) do not closely adhere to this policy.

The proposed seed mixtures in Table 7.2-1 on Pages E-20 and E-21 should be modified. The major modifications to these tables should be the substitution of native perennial grasses, such as squirreltail, Idaho fescue, blue wildrye, and California brome for final revegetation, rather than the proposed highly invasive, non-native grass species, such as intermediate wheatgrass, pubescent wheatgrass, and orchardgrass. The allowable exception to this proposed modification could be the mixture for Proposed Interim Disturbed Site Seed Mixture, where the invasive and highly competitive nature of the proposed species will not interfere with final site reclamation. In addition, the seed mixtures should be reasonably diverse (i.e. include a large number of species) in order to increase the chances of successful revegetation.

Specifically, the Proposed 'Shrub Site' Seed Mixture should include blue wildrye and California brome. The Proposed 'Intermediate Site' Seed Mixture should not include intermediate wheatgrass, but should include species such as squirreltail, meadow barley, Idaho fescue, California brome, blue wildrye, meadow barley, squaw carpet, and big sagebrush. The Proposed 'Dry Site - Fine to Moderate Texture' Seed Mixture should not include intermediate wheatgrass, but should include squirreltail, meadow barley, blue wildrye, barestem buckwheat, common eriophyllum, and desert gooseberry. The Proposed 'Dry Site - Moderate to Coarse Texture' Seed Mixture should not include intermediate wheatgrass, pubescent wheatgrass, or sheep fescue, but should include squirreltail, meadow barley, Idaho fescue, California brome, barestem buckwheat, common eriophyllum, and desert gooseberry.

In addition, areas that could support junipers, such as the proposed shrub site areas, should be sparsely replanted with junipers. The junipers on the site currently add greatly to

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the structural diversity of the shrublands and would provide similar values to the reclaimed landforms.

All the recommended native perennial grasses, shrubs, and trees specified in the modifications above are commercially available; however, availability of these native species is highly variable. The fact that this operation will take place over a minimum period of eight years will work to the operator's advantage. The operator will have a significant amount of lead time in which to procure and/or contract for the needed quantities of these species. Seeds used on this site should be closely matched with the growing conditions on the site, preferable representing local or regional ecotypes. In addition, the operator should consider collecting some of the native species, especially the shrub species, from the project area.

14. The reclamation plan includes a general narrative description of the areas that will be seeded with each mixture. A final revegetation plan for this site should be developed that details which seed mixture will be used on the various reclaimed landforms, and which areas will be planted with Jeffrey pines and junipers. This final revegetation plan should also describe the test plots design alluded to in the Reclamation Plan and DEIR/DEIS for the low sagebrush community.

15. Areas being revegetated will probably need to be protected (i.e. fenced) from herbivory, including grazing, for a minimum of two growing seasons following seeding. Protection methods include fencing the entire area to be revegetated or fencing individual shrub and tree seedlings. If the operator does not elect to protect revegetated areas from herbivory, the operator will likely not meet revegetation performance standards.

16. If at all feasible, access roads and drilling pads for pipeline placement and wellfield construction should not be bladed; instead the vegetation should be crushed in place and the soil profile left intact. Reclamation would then consist of shallow scarification of the soil surface and light seeding of the native plant species. Crushing the vegetation in place will preserve the soil structure and, thereby, enhance revegetation success.

17. The current proposal for soil salvaging indicates that the O, A, and B horizons will be mixed and stockpiled together. Better success with the revegetation of this site could be attained by stockpiling and respreading the O and A horizons separately from the B horizons.

- 28-14-3 Figure 10 of the revised Reclamation Plan (Appendix E) is a planting plan for the site.
- 28-14-4 Section 4.11 of the revised Reclamation Plan (Appendix E) provides the manner in which reclaimed areas will be protected. Livestock will be controlled by fencing until reclamation is proven successful by the release criteria.
- 28-14-5 The topsoil will be left in place in the areas of the topsoil stockpiles, minor roads and drill pads. See Section 3.3 of Appendix B of the revised Reclamation Plan (Appendix E).
- 28-14-6 Due to the similarity of soil horizons and the low organic matter content of the A horizon, soil horizons will not be segregated.

28-15-1 The revised Reclamation Plan (Appendix E) was prepared with the intention of complying with all revisions of SMARA including the proposed Reclamation Standards, Draft 5-22-1991, Article 9, Statewide Minimum Verifiable Reclamation Standards. Written responses to the comments are contained in this document.

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18. Recent amendments to SMARA (Assembly Bills 3551 and 3903/Chapters 1097 and 1101, Statutes of 1990), which became effective January 1, 1991, require that financial assurances be required of all surface mining operations to guarantee site reclamation; that the financial assurances be payable to the SMARA lead agency and the State Geologist; that the financial assurances be submitted to the State Geologist for his review and comment; and that lead agencies annually inspect mining operations to determine SMARA compliance. These requirements should be incorporated into the reclamation plan prior to approval.

Section 2774 (d) of the same legislation requires that lead agencies send a copy of the reclamation plan to the State Geologist for review no less than 45 days prior to approval. The lead agency is also required to prepare a written response describing the disposition of the major issues raised. In particular, when the lead agencies position is at variance with recommendations and objections raised in the State Geologist's comments, the written response shall address, in detail, why specific comments and suggestions were not accepted. Written comments received and responses prepared by the lead agency should be forwarded to the operator.

Please send a copy of the approved reclamation plan, response to our comments, and permit issued by you as lead agency under SMARA to the Mine Reclamation Program office at 650-B Bercut Drive, Sacramento, CA 95814. The approved documents will be placed in the Mine Reclamation Program files pursuant to the Surface Mining and Reclamation Act.

Thank you for the opportunity to comment on this project. Because of the nature of the impacts involved, please consider this letter as a formal request for a copy of the Final EIR or your response to our comments. If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact me at (916) 322-5873.

Dennis J. O'Bryant
Dennis J. O'Bryant
Environmental Program Coordinator

cc: Kenneth E. Trott, Office of Land Conservation
Roger Martin, Division of Mines and Geology
Honey Lake Valley Resource Conservation District
Bureau of Land Management, State Office
BLM, Susanville District Office
Modoc National Forest

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, Ca. 94105

June 11, 1991

Herrick E. Hanks
District Manager
Bureau of Land Management
705 Hall Street
Susanville, CA 96130

Dear Mr. Hanks:

The Environmental Protection Agency (EPA) has reviewed the proposed Draft Environmental Impact Report/Environmental Impact Statement (DEIS) for the Hayden Hill Project, Lassen County, California. Our comments on this DEIS are provided pursuant to the National Environmental Policy Act (NEPA) and EPA's authorities under Section 309 of the Clean Air Act.

The Hayden Hill Project, a proposed open pit gold and silver mine, is located on 2800 acres of private, Bureau of Land Management (BLM), and U.S. Forest Service (USFS) land. The operation would use conventional heap leach and milling processes to recover metals over a period of eight years. At project completion, approximately 950 acres would be disturbed.

We have classified this DEIS as EC-2 -- Environmental Concerns-Insufficient Information (see enclosed "Summary of Rating Definitions and Follow-Up Action"). Our "EC" rating reflects our concerns regarding potential impacts to water quality resulting from acid rock drainage, and erosion and sediment runoff from the disturbed site into local streams. We are also concerned that the proposed alternative would adversely affect several acres of wetlands and that other alternatives exist which may be less environmentally damaging. Further, we recommend that BLM consider requiring greater than 1:1 replacement of sensitive habitats, as well as additional water quality monitoring. Our "2" rating reflects the fact that certain relevant information is missing from the DEIS. The final environmental impact statement (FEIS) should provide further information regarding baseline (existing) air and water quality, mitigation of water quality impacts, and post-closure maintenance and monitoring procedures. Our detailed comments are attached.

29-1-3
Baseline water quality data for surface and groundwaters are currently being collected by LGMI in conjunction with the CRWQCB. Please refer to Sections 2.2.6.2 and 3.6.5.

The CRWQCB has worked with LGMI in developing background water quality data for both surface and groundwaters, which will be necessary to monitor and evaluate any impacts the Project may have on water quality. Due to the inclusion of the CRWQCB staff at the early stages of the proposed mine, staff recommendations have resulted in the development of conditions and mitigation measures which, if followed, will effectively reduce adverse effects upon water quality.

At the close of operations, CRWQCB personnel will assist LGMI in reclamation and post-Project monitoring to prevent any long-term threat to waters of the State.

29-1

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We appreciate the opportunity to review this DEIS. Please send three copies of the FEIS to this office at the same time it is officially filed with our Washington, D.C., office. If you have any questions, please contact me at (415) 744-1015, or have your staff contact Jeanna Dunn Geselbracht, Office of Federal Activities, at (415) 744-1576.

Sincerely,

Deanna M. Wieman

Deanna M. Wieman, Director
Office of External Affairs

Enclosures

cc: Ed Lorentzen, U.S. Fish and Wildlife Service
Tom Stone, California Department of Fish and Game

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Hayden Mill Mining DEIS
EPA COMMENTS June, 1991

Water Quality

1. The FEIS should include a baseline chemical characterization of groundwater at the site including values for those chemicals that would be used as reagents in the mining process (e.g., cyanide).

2. We recommend that the FEIS include a quantitative estimate of leakage rates from the tailings impoundment, leach heap, and waste rock pile, and the potential impact of this leakage on groundwater quality.

3. According to the DEIS, it is unlikely that water from the regional aquifer would accumulate in the mined pit. However, if the possibility exists for water from the perched aquifer to seep into the pit and accumulate, the FEIS should assess the potential impacts of fracture flow of contaminated water (e.g., acid rock drainage) on the regional aquifer.

4. The FEIS should indicate screened depths of the monitoring wells identified in Appendix K of the DEIS.

5. We recommend that the monitoring plan include vadose zone monitoring devices (e.g., suction lysimeters) beneath the tailings pile, leach heap, and waste rock pile. Further, we recommend that, in addition to the head ore, the tailings and waste rock also be tested for acid rock drainage potential. The tailings, which would be much finer material than the head ore, would have a much greater surface area. Therefore, leach tests on head ore, tailings, and waste rock could significantly differ.

6. The FEIS should include projections regarding the recovery times for aquifer recharge after mine closure.

7. Under the proposed alternative, the drainage through the middle of Section 36 just northwest of the waste rock pile is adjacent to a long, unbench slope and appears to be highly susceptible to increased sediment loading from erosion and runoff on the slope. However, it is unclear exactly what the impacts to the stream would be. The FEIS should include a discussion of the predicted sediment loadings for each of the three waste rock pile alternatives. In addition, measures to avoid or minimize these impacts should be discussed. We suggest that BLM reconsider the design of the waste rock pile to provide an effective buffer zone between the slope and the stream channel.

29-3-1 Baseline water quality data for surface and groundwaters are currently being collected by LGMI in conjunction with the CRWQCB. Please refer to Sections 2.2.6.2 and 3.6.5.

29-3-2 The average estimated rate of seepage for the tailings impoundment is 3.5 gpm over the life of the facility. The tailings impoundment heap leach facility and associated ponds are designed as closed system zero discharge facilities. The waste rock facility is an open system. The potential impact of facility "leakage" is the degradation of surface and groundwaters. Established mitigation measures to alleviate this impact are presented in Section 4.2.6.3.

29-3-3 Studies have concluded that the shallow groundwater occurrences are hydrogeologically separated from the deeper regional aquifer. The pit operations are anticipated to only influence the shallow groundwater occurrences in the immediate vicinity of the Project area. Hence, degradation of the regional aquifer due to pit operations is remote.

29-3-4 The screened depths for existing monitoring wells are summarized as follows:

Well	Surf Elev.	Screen
89-1	5,843	980-1000
89-2	ABANDONED	- CEMENT - 605 TO SURFACE
89-3	5,633	700-720
89-4	5,675	621-641
89-5	5,642	180-200
90-6	5,725	921-931
90-7	5,680	612-632
90-8	5,675	198-218
90-9	5,200	360-380
90-10	5,550	60-80
90-11	5,675	650-670

NOTE: Elevations preliminary, pending survey.
Additional information is available at the offices of Lassen County and the CRWQCB.

29-3-5 The CRWQCB has required LGMI to install groundwater monitoring wells and lysimeters to monitor both the groundwater and unsaturated zone beneath the tailings, heap leach, and solution pond facilities. The data will be compared to background information obtained prior to the beginning of operations to detect any pollutants which may migrate from the facility.

Evaluation of ARD potential was performed for Lookout and Providence zone waste materials, as well as heap and mill grade materials.

29-3-6 Please refer to Section 4.2.6.2 for anticipated recharge rates.

29-3-7 Please refer to Sections 4.2.6.2, 4.2.6.3 and 4.2.6.5.

Rayden Hill Mining DEIS
EPA Comments June, 1991

8. According to the DEIS (page E-30), the sedimentation pond in Preston Canyon would be monitored in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The FEIS should discuss the mitigation measures that would be taken if the discharge from the pond were found to be out of compliance with the permit.

9. The DEIS (page E-30) indicates that water in the sedimentation pond in Preston Canyon would be monitored until such time as the NPDES permit can be terminated (i.e., until the water quality can be shown to meet the requirements of the permit with no additional treatment). Elsewhere the DEIS states that after operations cease, the functional ability of all sediment control structures will be monitored and maintained on a semi-annual basis, or as appropriate (page 4-64). The DEIS also states, however, that sediment loading in Preston Canyon would slightly increase after mine closure because the sedimentation pond would not be maintained (page 4-57). The FEIS should clarify this discrepancy and estimate how long after site closure these sediment control structures on the site would continue to be monitored and maintained. Further, we recommend that BLM require post-closure measures that would minimize to the extent possible any increases in sedimentation resulting from the disturbed site after closure.

Wetlands

1. According to the DEIS (page 4-30), the project, as proposed, would adversely affect 6.55 acres of wetlands, 80 feet of permanent stream channel, and 1,315 feet of intermittent stream channel. The project proponent has applied to the U.S. Army Corps of Engineers for a permit pursuant to Clean Water Act §404 for the proposed project. However, the DEIS does not provide sufficient information to determine whether the proposed project complies with the Federal Guidelines for Specification for Disposal Sites of Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Clean Water Act §404(b)(1).

The 404(b)(1) Guidelines require that the project:

- ♦ be the practicable alternative which would have the least adverse impact on the aquatic ecosystem [40 CFR 230.10(a)],
- ♦ not violate State water quality standards or jeopardize any federally-listed threatened or endangered species [40 CFR 230.10(b)],

29-4-1

Runoff erosion studies indicate the net sediment trapping efficiency of the sedimentation pond system is approximately 92% and sediment concentration levels are predicted to be below pre-mining levels overall. Should sediment concentration levels in the sediment pond discharge exceed NPDES levels, additional erosion control measures will be taken to reduce sediment concentrations to acceptable levels. Under the NPDES permit, surface discharges which do not meet permit requirements are punishable by a substantial fine. The applicant could also be liable for damages and remediation. It is not anticipated that further mitigation is necessary.

29-4-2

During Project operations, all sedimentation control structures installed in on-site drainages will be checked for blockage bi-monthly. Any debris or sediment that inhibits the proper function of the surface drainages will be removed immediately by the Applicant.

Reclamation activities shall include interim and final control of slopes on cuts and fills, plus revegetation to control surface erosion, sheet flow, and sediment loading. After operations cease, the functional ability of all sediment control structures will be monitored and maintained on a semi-annual basis, or as appropriate to satisfy regulatory criteria. Monitoring and maintenance operations are anticipated to continue until water quality can be shown to meet NPDES permit requirements with no additional treatment. At this time the NPDES permit will be terminated. The CRWQCB will ultimately stipulate when and if sediment ponds are reclaimed. Please also refer to Sections 4.2.6.2, 4.2.6.3, and 4.2.6.5.

29-4-3

Sections 3.4.2.5 and 4.2.4.3 have been revised to include further work conducted on wetlands.

Reyden Hill Mining DEIS
EPA Comments June 1991

- † not cause or contribute to significant degradation of waters of the United States, including wetlands [40 CFR 230.10(c)],
- † include all appropriate and practicable steps to minimize adverse impacts on the aquatic ecosystem (i.e., mitigation) [40 CFR 230.10(d)]. Mitigation is considered only after all impacts to wetlands have been avoided to the extent practicable.

It is not clear that the proposed alternative is the least environmentally damaging practicable alternative. For example, it appears that Facilities Location Alternative 3 would affect fewer wetland acres than the proposed alternative. The FEIS should demonstrate how the proposed project complies with the 404(b)(1) Guidelines.

- 29-5-4
2. Outside a 2-mile radius of the project site, groundwater drawdown could be as much as 58 feet. This is not considered a significant adverse impact, however, because there would likely be little or no effect on the regional groundwater system (DEIS, page 4-58). The FEIS should estimate what drawdown would be at the nearest private well and identify any impacts to the well. In addition, it is not clear that drawdown of the regional aquifer would not affect local springs and seeps, even if fed by a perched aquifer. However, the DEIS (page 4-65) indicates that the impact to local seeps and wetlands from groundwater drawdown is not considered to be significant. To substantiate this claim, the FEIS should estimate the number of wetland acres that could potentially be affected by groundwater drawdown (either in the regional aquifer or via fracture flow in the perched aquifer) over the life of the proposed project.

Vegetation and Wildlife

- 29-5-5
1. If the Modoc sucker exists in the project vicinity, this federally listed endangered species could be adversely affected by sedimentation and loss of riffle and pool complexes. We recommend that BLM coordinate with the U.S. Fish and Wildlife Service to determine whether the proposed project necessitates formal or informal consultation under the Endangered Species Act. In addition, we recommend that BLM coordinate with the California Department of Fish and Game regarding any state-listed species such as the sandhill crane.

- 29-5-6
2. According to the DEIS (page 4-32), vegetation reclamation/mitigation would probably not be fully successful. We recommend that BLM consider requiring habitat mitigation at a ratio of greater than 1:1, particularly for those communities where the local duripan substrate, which would be difficult or impossible

29-5-4

Impacts to the regional aquifer system are discussed in Section 4.2.6.2. Drawdown estimates for the region are presented in the text. The two nearest wells (including wells for stock tanks) are located at Deep Spring and Avila Place. Both are located approximately six miles northwest and northeast of Bunselmeier Spring, respectively. Because of the geographic location of these two nearest wells, the impacts to these wells are expected to be non-existent or insignificant.

As stated in Section 4.2.4.2, a total of 6.55 acres of wetlands, 80 lineal feet of permanent stream channel, and 1,315 lineal feet of intermittent stream channel would be impacted by the Proposed Action. These impacts are considered long-term for habitat value and short-term for cover value since reclamation would include these areas. A mitigation plan for impacts to wetlands has been prepared by the Applicant in conjunction with the Corps of Engineers 404 Permit and is included in Appendix I.

Wetlands are regulated by the Clean Water Act (CWA) of 1972. The CWA is administered by the Corps of Engineers and the Environmental Protection Agency (EPA) in a joint effort defined by a memorandum of understanding between the two agencies. The wetlands regulations require mitigation of all impacted wetlands. The mitigation plan for the Project (see final EIR/EIS) has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, Project impacts to certain key wildlife species. The proposed mitigation plan will create approximately 18.5 acres of seasonally inundated wetlands. See Section 4.2.4.

The Applicant has also committed to rerouting springs and seeps, to the extent feasible, that are intercepted during construction of ore processing facilities. Drains will be constructed to route the seepage waters away from the construction. If necessary, an infiltration gallery could be used downstream of the Project to return these rerouted waters to the subsurface.

29-5-5

Chapter 6.0 on consultation and wildlife Sections 3.5.3, 4.2.5.2, and 4.2.5.4 have been updated to include results of consultation with USFWS and CDFG. Copies of consultation correspondence are located in Appendix N.

29-5-6

Mitigation for the loss of Low Sagebrush habitat is specified in Section 4.2.5.4. The goal of the mitigation is to maintain and enhance 355 acres of Low Sagebrush habitat adjacent to the Project area, to replace sage grouse and pronghorn habitat. The Low Sagebrush mitigation area includes duripan soils. Low Sagebrush vegetation is commonly associated with duripan soils. Also please see the Habitat Mitigation Plan located in Appendix I.

Hayden Hill Mining DEIS
EPA Comments June, 1991

to replicate, is an influencing factor in the success of species populations such as *Antennaria flagellaris*.

- 29-6-2 3. The FEIS should indicate how any rerouted springs and seeps would be revegetated.

Air Quality

- 29-6-3 1. We commend the project sponsors for proposing to providing employee transportation to and from the work site. Buses and vanpools would help reduce vehicle traffic and air pollution, and conserve energy.

- 29-6-4 2. The DEIS provides baseline data for particulates smaller than ten microns (PM10) in the project vicinity. The FEIS should include baseline concentrations of other pollutants for which limits exist, such as ozone, carbon monoxide, oxides of nitrogen, sulfur oxide, and lead.

- 29-6-5 3. According to the DEIS, ozone baseline concentrations at the site would not be negligible, but would be "near natural levels." The FEIS should clarify what "natural levels" are in this context.

Pre-Mining, Active Mining, and Post-Mining Plans and Procedures

- 29-6-6 1. According to the DEIS (page 4-47), an emergency field procedures manual would be prepared for the protection of aquatic wildlife and habitat. We recommend that this manual be prepared prior to commencement of any construction activities.

- 29-6-7 2. We recommend that all contingency plans for containment system failures (e.g., of the tailings impoundment and the heap leach pad) be approved prior to commencement of active mining operations.

- 29-6-2 The revised Reclamation Plan (Appendix E) includes a Section on the reclamation of the wetland areas.

29-6-3 Comment acknowledged.

29-6-4 Please see Section 3.7.2 Sulfur oxides and lead would be emitted by activities related to the Proposed Action, but only in negligible quantities. Ambient concentrations of these pollutants are negligible and will remain so because of the distance of the Project site from industrial areas. Ozone occurs naturally in the atmosphere. Concentration levels of ozone become elevated in the presence of sunshine and airborne reactive hydrocarbons, which are from urban and industrial sources. Ozone is not a concern in rural areas because of the rural atmospheric chemistry. Carbon monoxide and nitrogen dioxide would be emitted by the Project. Since the Project area is rural and not influenced by towns and other industrial facilities, the baseline of these pollutants are considered to be less than 10% of their standards.

To justify the assumption that the nitrogen dioxide background concentrations are negligible due to the rural nature of the site, data from a nearby meteorological station was examined. The closest present State monitoring site for NO₂ is at Redding, California. From quarterly Air Quality Data Reports published by the California ARB, the highest daily maximum 1-hour average NO₂ concentration for 1990 was 7 parts per hundred million, or 0.07. This is 28 % of the State 1-hour standard of 0.25 ppm. The annual averages for 1986 and 1987 were 0.014 ppm and 0.015 ppm, respectively or 26 to 28 % of the annual standard of 0.053 ppm. However, Redding is located at the extreme northern end of the Sacramento Valley, in an urban area that also contains the Interstate 5 freeway. It thus contains more sources of NO₂ than are found near the remote Hayden Hill location. For comparison, three months of NO₂ data collected in 1985 at Burney, about 40 miles west of Hayden Hill and at a location more removed from the Sacramento Valley, showed an average of 0.001 ppm (2% of the standard) and a maximum hourly value of 0.006 ppm (also 2% of the standard). Ambient levels at Hayden Hill, further removed from any local sources than even Burney, should be similar or lower.

- 29-6-5 Ozone occurs naturally in the atmosphere. Concentration levels of ozone become elevated in the presence of sunshine and airborne reactive hydrocarbons, which are from urban and industrial sources. Ozone is not a concern in rural areas because of the rural atmospheric chemistry. Therefore, due to the remote nature of the site, the baseline concentration of ozone at the Project site will be "near natural levels" and below State and Federal regulations (Section 3.7.2).

29-6-6 The USFS, USFWS, and the CDFG have all helped develop and review the Emergency Response Plan for Modoc sucker. The Emergency Response Plan is included in Appendix L with the SPCC Plan.

29-6-7 The SPCC and ERP was completed and accepted by the agencies prior to the release of the Final EIR/EIS. The mining operations would begin after that time.

30-1-1

United States Department of the Interior

BUREAU OF MINES

WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE WASHINGTON 99202 1413

May 30, 1991

Mr. Randall Sharp
USDA-Modoc National Forest
44 North Main Street
Alturas, California 96101

Dear Mr. Sharp:

SUBJECT: REVIEW OF DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT (EIR/EIS) FOR THE HAYDEN HILL PROJECT, LASSEN COUNTY, CALIFORNIA

We have reviewed the Draft EIR/EIS and agree that the proposed action is an acceptable plan of operation. This is a thorough document with a generalized mining plan and detailed discussion of the affected environment and environmental consequences.

The mineral resource potential of the Hayden Hill area has been recognized for some time, and as noted in a letter to District Ranger Thomas Harbour on November 27, 1989, company reports have defined a sufficient mineral resource to justify development.

Thank you for the opportunity to comment. If we can be of technical assistance with any mineral-related issues, please contact us.

John R. Norberg

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COVINGTON DISTRICT
16-277

ADJUTANT	
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FIELD LAB.	
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ADMIN.	
OPER.	
EAGLE LAKE OFFICE	
ALTURA OFFICE	
CURTIS OFFICE	

1. Information
2. Action
3. Copy

12-211

30



United States Department of the Interior

NATIONAL PARK SERVICE

WESTERN REGION
600 HARRISON STREET, SUITE 600
SAN FRANCISCO, CALIFORNIA 94107

IN REPLY REFER TO:

L7617(WR-RP)

May 28, 1991

Mr. John Bosworth
Bureau of Land Management
705 Hall Street
Susanville, California 96130

Dear Mr. Bosworth:

We have reviewed the draft environmental impact statement for the **Hayden Hill Project**, a proposed open pit, heap leach and mill, precious metals mine in northern Lassen County and have the following comments:

The proposed project is not adjacent to any unit of the National Park Service (Lassen Volcanic National Park, the nearest unit of the National Park Service, is located 35-40 miles southwest of the site), and we therefore have no concerns or comments with respect to possible impacts of this project on National Park System units.

The project would adversely affect at least two significant historic sites: the Hayden Hill Townsite and the Hayden Hill Fire Lookout. The State Historic Preservation Officer (SHPO) has tentatively approved the **Hayden Hill Data Recovery Plan**, and has made additional provisions requiring: the relocation outside of the project area and Historic American Buildings Survey documentation of the Hayden Hill Fire Lookout; the execution of a curatorial agreement acceptable to both the Bureau of Land Management and the SHPO; and SHPO review and approval of the draft data recovery report. We concur with the additional provisions established by the SHPO.

We are unable to comment directly on the inventory and data recovery plan without additional information. Please provide copies of the Class III cultural resources survey and the **Hayden Hill Data Recovery Plan** (both by Western Cultural Resource Management, Inc., 1990) to:

Division of National Register Programs
National Park Service
600 Harrison Street, Suite 600
San Francisco, California 94107-1372

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JUN 3 1991

LASSEN COUNTY
PLANNING DEPT.

31-1-3 Comment acknowledged.

31-1-4 Due to a shortage of these documents and their classified nature, a copy of the final report will be made available at the Susanville BLM when complete.

31-1-3

31-1-4

STATE OF CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL VALLEY REGION

SHASTA CASCADE WATERSHED BRANCH OFFICE:

415 KNOXCREST DRIVE

REDDING, CA 96002

PHONE: (916) 224-4845

FAX: (916) 224-4857

PETE WILSON, Governor



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MAY 31 1991

LASSEN COUNTY
PLANNING DEPT.

29 May 1991

Mr. Robert Sorvaag, Director
Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, CA 96130

**HAYDEN HILL PROJECT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT,
SCH. NO. 89020079, LASSEN COUNTY**

The California Regional Water Quality Control Board, Central Valley Region, has reviewed the Environmental Impact Report/Environmental Impact Statement for the Hayden Hill Project, Lassen County, and offers the following comments:

Regional Board staff has been working closely with Lassen Gold Mining, Inc., (LGM) operators of the Hayden Hill Project, since its inception. During our numerous meetings and conversations, Regional Board staff and LGM have discussed the Regional Board's requirements for construction and operation of the proposed mine and ore processing facilities. Our emphasis has been directed toward design of containment structures for materials which, if allowed to discharge off-site or leave the immediate control of the project, may have an adverse impact on water quality. We have also worked with LGM in developing background water quality data for both surface and ground waters which will be necessary to monitor and evaluate any impacts the project may have on water quality. Due to the inclusion of the Regional Board staff at the early stages of the proposed mine, staff recommendations have resulted in the development of conditions and mitigation measures which, if followed, will effectively reduce adverse effects upon water quality.

Regional Board staff has also reviewed construction specifications for the containment of the cyanide solutions including the heap leach pads, solution ponds, associated pipelines and conveyance structures, tanks, and the tailings impoundment. Staff will inspect the facilities both during construction and throughout operation of the project to help assure the continued integrity of the containment structures throughout the life of the project. At the close of operations, staff will remain actively involved in reclamation and post-project monitoring to prevent any long-term threat to waters of the state.

32-1-1 Comment acknowledged.

32-1-1

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LASSEN COUNTY
PLANNING DEPT.

-2-

Mr. Robert Sorvaag

29 May 1991

The Regional Board will also require LGMI to install ground water monitoring wells and lysimeters to monitor both the ground water and unsaturated zone beneath the facilities. The data will be compared to background information obtained prior to the beginning of operations to detect any pollutants which may migrate from the facility. A similar monitoring program will be implemented for runoff from the waste rock dump and other disturbed areas. If waste constituents are found in concentrations which pose a threat to water quality, the operator will be required to take prompt actions to prevent or remediate any impacts to ground or surface water quality.

The mechanism by which the Regional Board will enforce the state requirements for protection of water quality includes two regulatory documents which contain criteria for operation and monitoring of portions of the facility. Waste discharge requirements (WDRs) will specify construction and operation criteria for all aspects of the facility which contain materials which may affect water quality. A National Pollutant Discharge Elimination System (NPDES) permit will be used to monitor and control discharges to surface waters and surface water drainage courses including discharges of stormwater from the open pit and runoff from the waste rock dumps, roads, and stream crossings. These documents are adopted by the Regional Board at public hearings. The general public may review these documents and provide comments prior to their adoption.

If you have any questions, please contact me at (916) 224-4853 or the address above.

Phil Woodward

PHILIP V. WOODWARD, C.E.G.
Associate Engineering Geologist

PVW:gin

cc: U.S. Bureau of Land Management, Susanville
Mr. Randy Sharp, U.S. Forest Service, Alturas
State Clearinghouse, Sacramento
Mr. Jeff White, Lassen Gold Mining, Inc., Susanville

Lassen County Farm Bureau

P.O. BOX 289 TELEPHONE (916) 257-7242
SUSANVILLE, CALIFORNIA 96130

Planned

33-1-1 Comment acknowledged.

May 23, 1991

Board of Supervisors
707 Nevada Street
Susanville, Ca. 96130

Attn: Bill Bixby, CAO

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MAY 28 1991

LASSEN COUNTY
PLANNING DEPT.

Dear Sir,

The Lassen County Farm Bureau is very concerned about the Hayden Hill mining project. We wish it known that we support Jerry Parks views stated in the attached letter. If you could please make copies and distribute them to the supervisors, we would be very grateful.

Sincerely,

Ron Bickenstaff

Ron Bickenstaff, President

WILLIAM D. BIXBY

MAY 24 1991

COUNTY ADMINISTRATIVE OFFICER

12-215

33

STATE OF CALIFORNIA

1102 Q STREET
P.O. BOX 2815
SACRAMENTO, CA 95812



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June 21, 1991

JUN 24 1991

LASSEN COUNTY
PLANNING DEPT.

TO: Mr. Merle Anderson
Lassen County Planning Department
707 Nevada Street, Room 236
Susanville, CA 96130

Mr. Tom Loftus
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

THROUGH:

Janalene Sharples
Chairwoman

FROM:

James D. Boyd
Executive Officer

SUBJECT: Draft EIR for the Hayden Hill Project
Lassen County, SCH# 89020079

We have reviewed the Draft Environmental Impact Report (DEIR) for the Hayden Hill Gold mining project. Our comments regarding this proposal are given below.

PROJECT DESCRIPTION

The proposed gold mining project encompasses 2,800 acres located in northern Lassen County. The operation would use heap leach and milling processes to recover gold. The inventory of the mineralized deposits is estimated at 45.4 million tons: 9.6 million tons of millable grade material, and 35.8 million tons of heap leach material. Ore would be processed at the rate of approximately 6 million tons per year: 1.3 tons of millable material and 4.7 million tons of heap leach material.

The active life of the mine is estimated at 8 years. Within this period, 87.5 million tons of overburden and waste would be removed from the mine. At the end of the project, approximately 950 acres would be disturbed. The mineral deposits are located in elevations ranging from 5,400 to 6,300 feet above sea level.

COMMENTS

1. Air Quality Impact Analysis

We have reviewed the air quality modeling analysis prepared by Air Sciences Inc. for the proposed project. We find the air quality modeling analysis contained in the DEIR deficient in the following areas:

Mr. Merle Anderson
Mr. Tom Loftus

-2-

June 21, 1991

- a. The background data used in the DEIR should be accompanied by documentation of an adequate quality assurance (QA) plan to be considered for regulatory use. Also, these data do not include a complete year of sampling; the applicant should justify its use of "annual" averages.
- b. The applicant states that nitrogen dioxide background concentrations are negligible due to the rural nature of the site (page 8). This assumption should be technically justified.
- c. Onsite meteorological data were used in the modeling analysis. The use of such data in the regulatory process requires that the data be properly quality assured and that maintenance be performed during start-up and every six months (Environmental Protection Agency Prevention of Significant Deterioration Monitoring Guidelines). Documentation regarding QA and maintenance schedules should be provided.
- d. The use of Holzworth's climatological mixing height data is appropriate for this study. The Air Resources Board (ARB) recommends the use of seasonal rather than annual average mixing heights. However, for this study, use of annual averages will not make a significant difference considering the low-level release heights of the sources.
- e. The applicant states on page 29 that the ISCST model was used. Since short-term impacts were modeled (24-hour PM10 and 1-hour nitrogen dioxide standards), ARB recommends that the applicant use the ISCST model. Application of ISCST utilizes hourly meteorological data instead of statistical summaries and allows short-term as well as annual impacts to be output. In addition, the DEIR states that only 240 days of hourly meteorological data are used. ISCST or ISCST require a full year of hourly meteorological data. If less than a full annual set is available, we recommend that the applicant either seek another representative meteorological station nearby or consider modeling with screening techniques that utilize "worst-case" meteorological data.

2. Emission Calculations

The DEIR indicates the estimated emissions from the proposed project are significant. The estimated emissions are:

- 34-2-1 Documentation of QA for baseline PM10 and background meteorological data collected after April 1, 1991 is provided in quarterly reports prepared by Desert Research Institute (DRI). Documentation of QA for the above data collected prior to April 1, 1991 is provided by Ron Percivalle Associates. This information is on file at the Lassen County Planning Department. See answer to comment 34-2-5 below for a justification of the use of annual averages.
- 34-2-2 The closest present State monitoring site for NO₂ is at Redding, California. From quarterly Air Quality Data Reports published by the California ARB, the highest daily maximum 1-hour average NO₂ concentration for 1990 was 7 parts per hundred million, or 0.07. This is 28 % of the State 1-hour standard of 0.25 ppm. The annual averages for 1986 and 1987 were 0.014 ppm and 0.015 ppm, respectively or 26 to 28 % of the annual standard of 0.053 ppm. However, Redding is located at the extreme northern end of the Sacramento Valley, in an urban area that also contains the Interstate 5 freeway. It thus contains more sources of NO₂ than are found near the remote Hayden Hill location. For comparison, three months of NO₂ data collected in 1985 at Burney, about 40 miles west of Hayden Hill and at a location more removed from the Sacramento Valley, showed an average of 0.001 ppm (2% of the standard) and a maximum hourly value of 0.006 ppm (also 2% of the standard). Ambient levels at Hayden Hill, further removed from any local sources than even Burney, should be similar or lower.
- 34-2-3 See response to comment 34-2-1 above.
- 34-2-4 Comment acknowledged.

The ISC/LT dispersion model was used for the analysis, and only long-term impacts were modeled for comparison with the ambient standards. The results of the modeling indicated that ambient standards will not be violated, so there is little chance that there will be problems with the short-term standards. Short-term impacts were not modeled because the sources cannot be defined on a short-term basis and the results would not be useful. It is generally accepted for ground-level fugitive sources that if the impacts on the long-term are well within the ambient standards, the standards will be met on the short-term basis also. If this is not found to be the case with real-time compliance monitors, the mine has considerable flexibility to rectify the problem with changes in mining activities. The flexibility is not available for stationary process sources such as paper mills and power plants.

With mining projects, the majority of the emissions are due to moving vehicles and operations that shift in location. With a well-controlled facility such as Hayden Hill, there will be very few emissions of the pollutants from the ore processing equipment. The NO_x emissions are from the mining machinery and haul trucks, and the particulates are from the ore and waste handling activities, which include the haul trucks. The locations and degrees of activities vary substantially on a day-to-day basis and cannot be predicted because the variability is dependent on equipment reliability and unique features of the ore body discovered during mining.

In the case of Hayden Hill, the highest annual NO_x impact would be less than one quarter of the annual ambient standards. With annual impacts, this low, it is highly unlikely that there will be any one-hour violations. The results of the long-term modeling indicated that the PM₁₀ impacts would be two-thirds of the incremental standard and this impact would occur at a very limited area southeast of the crushing area. Beyond 100 meters from this boundary location, the impact would decrease to less than half the incremental standard. It is also unlikely that there will be violations of the 24-hour PM₁₀ standard. With particulates, the 24-hour impact can be monitored at the anticipated location of maximum impact to prove no violation. If there is a violation, the dust control plan can be altered to eliminate any measured violation.

The dispersion analysis was performed using 239 days of on-site meteorologic data (See Section 3.7.1). This is less than the recommended one complete year necessary for a representative model. However, in a mountainous area such as the Hayden Hill site, the wind patterns are dominated by terrain effects. The on-site conditions cannot be approximated with regional data sets. Therefore, the 239 days of actual on-site data is better than off-site data. However, there are also seasonal effects on the meteorology, and without a full year, it is not certain that all seasons are properly represented. Even so, a substantial change in PM₁₀ and NO_x impacts are not anticipated.

It may be a condition of the Permit to Operate to perform a dispersion analysis using a full year of meteorologic data. If required, this analysis would have to be completed within 90 days to one year after commencement of operations, using actual on-site emission data. The results of this analysis would be a model of the actual impacts rather than a projection.

Mr. Merle Anderson
Mr. Tom Loftus

-3- June 21, 1991

Project Emissions (pounds/year)

	CO	HC	NO2	SOx	PM10
Process Emissions					237,941
Mining Emissions					785,790
Combustion Emissions					
Mobile	212,012	27,459	504,774	13,150	31,466
Process	2,632	211	10,527	764	229
Other Emissions	234,500		59,500		35
TOTAL	449,144	27,671	574,801	13,914	1,055,461

Considering the magnitude of the estimated emissions, the DEIR should include the following data and information:

- All of the support documentation for the calculation procedures used to estimate the project emissions listed on Tables 4.7-2, 4.7-3, and 4.7-4 of the air quality section.
- The references for emission factors used to quantify the uncontrolled project emissions.
- The data related to moisture content of the soil, when applicable.
- The road distances and the vehicles miles travelled used to calculate the mobile source emissions listed in Table 4.7-3 (Annual Combustion Emission Summary) of the DEIR's air quality section.
- The production rates used to calculate the process emissions listed in Table 4.7-3 of the air quality section.
- The sources of Miscellaneous emissions listed in Table 4.7-3 of the DEIR's air quality section.
- A clarification of whether or not the project emissions listed in Tables 4.7-3 and 4.7-4 are controlled or uncontrolled.

3. Best Available Control Technology

The DEIR should describe how the Best Available Control Technology (BACT) requirements of Lassen County Air Pollution Control District's

34-3-2

An EIR/EIS is an information and interpretive document used by the public and agencies to evaluate a proposed project. It is not necessary for an EIR/EIS to contain technical information of this nature. The information in question is available in the "Technical Report - Air Impact Analysis, Hayden Hill Project, Lassen County, California, prepared by Air Sciences, Inc. This document is on file at the Lassen County Planning Department and is available for public review.

Support documentation for calculation procedures is found in Section 5.0 of the above report. The bases for emissions calculations are the activity schedules given in Tables 6 through 9. Figures in these tables are used with appropriate emission factors taken from AP-42, EPA reports, stack tests (for dore furnace), design specifications (mercury report), and other reports. Emission factors used for specific applications are noted in the Air Sciences document.

See response to comment 34-3-2 above.

Air Sciences used 2 percent for the material moisture content. Natural soil moisture content of a soil ranges from 5 percent for sand to 25 percent for clay. Two percent represents an extremely conservative figure.

Road distances and vehicle miles traveled are given in Table 11 (page 17) of the Air Science document.

Production rates used to calculate process emissions are given in Tables 8 and 9 (pages 14 and 15) of the Air Sciences document.

Miscellaneous emissions are, in this case from "...less numerous mobile and semi-mobile machines use in construction..." (AP-42 (US EPA 1988), volume II, page II-7-1), i.e., construction equipment other than haul trucks, loaders, and dozers. AP-42 gives emission factors from this category of heavy-duty diesel-powered construction equipment separately from specific equipment such as loaders and dozers.

The "Miscellaneous Sources" found in Table 4.7-3 include fuel, lube, and maintenance trucks; supervisory vehicles (pickups); and on-site employee busses. There is an estimate of 25 total miscellaneous vehicles, approximately 20 of which are pickups. To be conservative, it was assumed that all the engines are diesel and of the size used in construction machinery such as tractors. These are grouped because their emissions as a group are less than 10 percent of the combustion emissions.

Table 4.7-4 includes columns for controlled and uncontrolled emission rates. Mobile mine machinery is fueled by diesel; there are no supplemental emission controls on this equipment (Table 4.7-3). Section 4.2.7.3 has been revised to clarify this information. Controls for the Process emissions in Table 4.7-3 are described in Section 4.2.7.4.

A description of the BACT proposed for the Hayden Hill Project, in conformance with Lassen County Air Pollution Regulations, as revised in April, 1991, are on file in the Lassen County Planning Department (Hansen 1991). These emission pollution controls are also summarized in Sections 2.2.8.12 and 4.2.7.4.

All applicable rules and regulations impacting the Project are discussed in Section 4.2.7.2.

Mr. Merle Anderson
Mr. Tom Loftus

-4-

June 21, 1991

(LCAPCD's) Regulation VI, Rules 6.1.e (affected pollutants) and 6.4.a (BACT) will be met. The DEIR should provide a description of each type of control equipment that would be used for each of the emission points. In addition, the DEIR should consider all applicable federal, state, and local rules and regulations impacting the proposed project.

4. Offsets

The project emissions for nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter less than 10 microns (PM10) exceed the district's offset threshold levels. Considering these significant emission levels, the DEIR should closely evaluate cumulative air quality impacts and potential mitigation measures.

Unless the project's air quality impacts are mitigated, a statement of overriding considerations must be made. Section 15093 of the California Environmental Quality Act (CEQA) Guidelines requires the decision maker to balance the benefits of a proposed project against its unavoidable environmental risks. Where the decision of the public agency allows the occurrence of significant effects which are identified in the EIR but are not at least substantially mitigated, the agency shall state in writing the specific reasons to support its action based on the final EIR. The DEIR should identify the mitigation measures and provide specific reasons why this project should be approved given the magnitude of the emissions.

5. Toxic Emissions

The DEIR should quantify potential toxic emissions such as: mercury; aldehyde; hydrochloric acid; sodium hydroxide; hydrogen cyanide; sodium cyanide; and crystalline silica. The DEIR should also include discussions on the applicability of all federal, state, and local rules and regulations related to the toxic air contaminants generated by the proposed project.

In addition, Public Resources Code section 21081.6 (Assembly Bill 3180) requires that, along with the adoption of an EIR, the lead agency must adopt a monitoring and reporting program to ensure compliance during project implementation. We recommend including such a program in the final EIR.

We appreciate the opportunity to offer these comments. If we can provide additional information or assistance, please contact Al Ghaffari of the Industrial Projects Section, at (916) 327-5605.

cc: Kenneth Smith, Lassen County APCD
A. J. Phillips, Caltrans, District 2
John D. Mitchell, Lassen County Transportation Commission
Mark Goodin, CEC
Jacqueline Wyland, EPA

Enclosure

34-4-2

Offsets are discussed in Sections 4.2.7.6 and 4.2.7.7. No other emission sources exist or are proposed in the area. Therefore, no significant cumulative impacts have been identified for air quality.

34-4-3

The mine will exceed LCAPCD standards for offsets. LGMI investigated all known possible sites to perform offsets to Project emissions of PM10, NO_x, and CO within a 15-mile radius of the Project site (See Section 4.2.7.6). LGMI has proposed offsets for PM10; however, offsets available will result in little air quality benefit. In addition, no offsets for NO_x and CO are available within a 15-mile radius. The only source within a 50-mile radius declined LGMI's offer for equipment to reduce NO_x and CO emissions. No other mitigation is possible.

The Air Pollution Control Officer may exempt a source from offset requirements. A source that may qualify for offset exemption is one that will neither cause nor contribute to a violation of an ambient air quality standard nor lead to the violation of established emissions increments. The exemption is possible if the offsets will result in little or no air quality benefit, if emissions offsets are not available, or if the offsets will not be cost effective.

Emissions from the Hayden Hill Project will not exceed State or Federal ambient air quality standards and the mine will operate within the Air Quality permit requirements. The only known available offsets will result in little or no air quality benefit. Therefore, the Hayden Hill Project qualifies for an exemption of offset requirements.

34-4-4

Section 4.2.7 includes this information.

34-4-5

A Mitigation Compliance Program is contained in Appendix D of this document.

Note: This letter includes comments to the Hayden Hill Resource Plan EIR and the Hayden Hill EIR/EIS. Only comments and responses pertaining to the Hayden Hill EIR/EIS are addressed herein. Comments on the Resource Plan are not required in this document by NEPA regulations or CEQA guidelines. Responses to the Resource Plan EIR are on file at the Lassen County Planning Department. The principal purpose of this letter was to comment on the Draft Resource Plan and related General Plan amendments. However, since some of the comments addressed the Draft EIR/EIS, the letter has been included. Responses to the Resource Plan portion of the Draft EIR/EIS comments are made where warranted. General Policy comments are not responded to in this context. See Letter 19 for responses pertaining to comments on the Draft EIR/EIS from the Law Office of Roger Beers.

35-1-1 This comment addresses the Hayden Hill Resource Plan, not this EIR/EIS. The Resource Plan is a separate document which is reviewed by the public separately from this EIR/EIS. Response to comments on the Plan are not required pursuant to CEQA. However, These comments will be taken into consideration as part of the public record when the County makes decisions on the Hayden Hill Resource Plan.

35-1-2 See responses to comment letter number 19 located in Chapter 12.0, Comment Letters and Responses in the Final EIR/EIS.

35-1-3 See response to comment 35-1-1.

C-1

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June 17, 1991

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Lassen County Board of Supervisors
707 Nevada Street
Susanville, California 96130

Re: Testimony regarding the Draft Hayden Hill Resource Plan and related General Plan amendments for the public hearing of 18 June 1991

Dear Lassen County Supervisors:

This letter is submitted on behalf of Larry Newhall as part of his testimony for your public hearing of 18 June 1991 regarding the Draft Hayden Hill Resource Plan and the related General Plan amendments. Mr. Newhall owns property around Dillon Lake, to the south of the proposed Hayden Hill gold mining project, and at Silva Flat Reservoir, to the southwest of the proposed project site. He manages these properties as Private Lands Wildlife Management Areas in cooperation with the California Fish and Game Commission. Mr. Newhall, in conjunction with Natural Resources Defense Council and The Wilderness Society, has submitted detailed comments on the draft environmental impact report and environmental impact statement for the Hayden Hill Project (referred to for brevity in this letter as the "EIR"), which includes an analysis of some of the environmental impacts of the proposed Resource Plan and General Plan amendments. We incorporate those comments into this letter of testimony by reference.

Not surprisingly, the Draft Hayden Hill Resource Plan and the related General Plan amendments suffer from the same broad defects as do the proposed project and the EIR that attempts to analyze its adverse environmental effects. The Draft Plan and the additions to it proposed in the EIR as mitigation measures for the Plan's adverse impacts are vague, not sufficiently protective of the various important resources of the Hayden Hill area, occasionally internally inconsistent, and at times patently misleading. In what follows, we will look at the elements of the Draft Hayden Hill Resource Plan and point out the respects in which it requires significant revision and refinement to make it into a plan that would truly protect the valuable resources of the Hayden Hill area from severe, long-term damage from the effects of the proposed project or any other major mining activity.

Mineral Resources Element

Mineral Resources Goal 2 proposes that development and management of mineral resources occur in a manner that minimizes environmental impacts. The

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Page 2

35-2-1 See response to comment 35-1-1.
35-2-2 See response to comment 35-1-1.
35-2-3 See response to comment 35-1-1.
35-2-4 See response to comment 35-1-1.

35-2-1

objective that addresses this goal. Objective B, simply repeats the goal, stating that mining projects will be permitted "in a manner that minimizes potential impacts...on the environment." While this is a laudable notion, the "policies" that follow offer little practical guidance as to how and to what degree the goal and objective are to be met. The State Mining and Reclamation Act (SMARA), the California Environmental Quality Act (CEQA), and a variety of other state and federal laws and regulations require that the adverse environmental impacts of mining be minimized through proper governmental regulation; the "Exploration Policies" and "Mine Development and Operation Policies" merely affirm that exploration and mining activities are subject to existing legal requirements, but offer no specifics.

35-2-2

If specific resource-protective policies were set forth under the other Plan elements, the generality of the policies of the Mineral Resources Element would be understandable. Unfortunately, as we shall see, a failure to provide tangible protective policies permeates all of the elements of the Draft Resource Plan. Such policies must be provided if the County is to ensure that it will properly carry out its lawful duties under SMARA, CEQA, and other applicable environmental laws to control and mitigate the numerous adverse impacts of surface mining.

35-2-3

Land Use Element

Under the current General Plan and other land use designations, the Hayden Hill area is identified as a valuable recreation and wildlife site. A map included in the Resource Plan, entitled "Existing Land Use Map," demarcates the entire area as a "Recreation and Wildlife" area. Draft Resource Plan, p. 2-2. Another map, explicitly based on the existing General Plan, identifies approximately a quarter of the entire proposed project area, including a portion of the Hayden Hill township, as a "Prime Recreation Area." Id., p. 4-2. This designation was made because of "the Hayden Hill historic mining area and associated historic resources." Id., p. 4-1. Further, 550 acres of the proposed project site are part of a State Game Refuge. EIR, p. 4-111.

35-2-4

Despite all of these explicit recognitions of the considerable value of the project area as a recreational and wildlife resource, the County is considering amending its General Plan, with the apparent intent of accommodating the proposed mining project, by adding the underlined words to the following provision:

With proper controls, including closure and reclamation plans, heavy industries such as mining, smelting or special industries such as waste disposal could take place in unpopulated areas with low inherent agricultural or recreational value.

35-3-1

Draft Resource Plan, App. A, p. 1. Even if the County were to amend its General Plan to adopt this new language, the proposed project would clearly not be consistent with this provision of the amended General Plan. This is so for the obvious reason that the County's own designation of part of the area as a prime recreation area, its acknowledgment of the wildlife and recreation values of the entire area, and the existence of a State Game Refuge on the site plainly demonstrate that this is not an area "with low inherent...recreational value." Under the proposed amendment to the General Plan, only areas with low inherent recreational values would be appropriate for mining.

Housing Element

35-3-2

Proposed Housing Objective B, Policy 1, would require that, for any mining project proposed for the Hayden Hill area, a housing impact analysis be included in the EIR for that project that would address availability of various types of housing needed for both temporary and permanent mine employees, housing affordability compared to employee incomes, and potential displacement of existing area residents. Draft Resource Plan, p. 6-2. Turning to the brief discussion of housing impacts of the proposed Hayden Hill mining project in the EIR, one finds a general discussion of the first of these three topics, the availability of various types of housing that project employees would require. EIR, pp. 4-84-87. However, no comparison is made of housing affordability to employee incomes (no mention of income is made at all, aside from a passing allusion to salaried workers being more likely to buy housing than hourly workers -- EIR, p. 4-86), nor is there any discussion of the potential for displacement of existing residents. Thus, even if the current weak Draft Resource Plan were to be adopted, the EIR on the Hayden Hill project fails to live up to its requirements regarding housing analyses.

Conservation - Open Space Element

35-3-3

The conservation element of the Resource Plan is where one should reasonably expect to find strong specific measures for the protection of important natural and other resources. Sadly, the Draft Resource Plan is just as vague and standardless in this element as it is for all the others. The policies to carry out the conservation goals almost invariably speak in terms of "encouragement" of certain results, not, as they should, requirement, and are riddled with loose qualifications of feasibility, with no indication of who is to decide what is feasible, or when.

Biological resources

35-3-4

Thus, one policy is to "encourage" use of native species for revegetation "when

35-3-1 See response to comment 35-1-1.

35-3-2 A statement has been added to the Project EIR/EIS Housing Section that it serves as the Housing Impact Analysis required by the Resource Plan. In response to the request to add a discussion of housing affordability and displacement in the Project EIR/EIS, refer to the discussion of these topics in the Lassen County Housing Element. Additional data may be available in the Prison Expansion EIR.

35-3-3 See response to comment 35-1-1.

35-3-4 See response to comment 35-1-1.

35-4-1

consistent with landscape and reclamation efforts." Resource Plan, p. 7-1. When critical habitats are subjected to significant adverse impacts, "off-site compensation may be considered with the objective of providing at least equivalent habitats." Id., p. 7-2 (emphasis added). Such permissive policies provide no assurances whatsoever that use of native species will be the rule and not the rare exception in revegetation plans nor that critical habitat lost will be replaced, rather than its replacement merely, and not even necessarily, being considered.

35-4-2

To mitigate the Draft Plan's overall impacts on biological resources of the project area, the EIR suggests that the following objective be added to the first Biological Resources Goal: "Any mining activity should be accompanied by a Reclamation Plan that minimizes impacts to biological resources of the planning area." EIR, p. 5-11. The policies intended to carry out this "goal" -- which merely restates existing requirements of SMARA and CEQA -- require nothing more than that the County or the California Division of Mines and Geology participate in the SMARA regulatory process for reclamation; that they consult with various agencies with whom they are required by law to consult; and that they approve only reclamation plans that "encourage" revegetation of disturbed areas "to the extent feasible" and that they further "encourage" the use of appropriate native plants in revegetation "unless this is infeasible." EIR, p. 5-12. In sum, two of the three "mitigation" policies simply paraphrase existing legal requirements without offering any guidance as to how those requirements are to be met. The third, with its "encouragement," rather than mandatory requirements, and its qualifications of feasibility, is so standardless as to provide no real policy for resource protection whatsoever.

35-4-3

Another policy in the Draft Resource Plan requires "mitigation for impacts to rare, threatened, or endangered species and sensitive habitats in the planning area." Draft Resource Plan, p. 7-2. While we applaud this rare mandatory requirement among the many loose provisions of the Draft Plan, we note that the proposed Hayden Hill project does not comply with this requirement. Both the EIR and the Draft Resource Plan acknowledge that four sensitive plant species exist on the site. Id., pp. 2-28-29. For one of these, Antennaria flagellaris, the population threatened with destruction by the project represents 20% of the entire population of this species known to exist in California. EIR, p. 4-27. However, the proposed mining project does not propose any mitigation for this sensitive plant nor for any others. See Newhall Comments on Draft EIR, pp. 8-9.

35-4-4

The proposed policies on riparian corridor resources are dreadful. While Objective A admits the need "to protect and manage riparian corridors as valuable wildlife and recreational resources," Policy 1 under that objective proceeds to encourage timber harvesting, road and utility crossings, mining operations, and livestock grazing in

35-4-1 See response to comment 35-1-1.

35-4-2 When a specific project is addressed, the reclamation plan would be provided and project-specific analysis would be done.

35-4-3 Impacts to rare, threatened or endangered species and sensitive habitats would be addressed on a project-specific basis. It is not the County's intent to be specific at the Resource Plan level. The size and type of project would determine the specific impacts on these biological resources. A. flagellaris was thought to exist in only one location in California. Subsequent research has shown the existence of at least 54 previously unknown populations. Exhaustive searches have not been conducted and habitat appears to be it is likely additional population may be found when a concentrated effort is made. Therefore, impacts to A. flagellaris the Project site are not considered significant.

In addition, it is not the policy of any of the involved agencies to transplant threatened or endangered species. Protection is the key in these cases. The impacts to the sensitive plant species on the Project site have been adequately avoided and minimized as addressed in Section 4.2.4.

35-4-4 Riparian corridors are addressed in the Resource Plan and are protected by existing State, Federal, and County laws.

35-5-1

these corridors. Draft Resource Plan, p. 7-2. None of these activities is likely to protect wildlife or recreational values; rather, they are by and large inimical to them. The tone of the policy should be strictly to circumscribe such uses in riparian corridors, not blithely to invite them. Adding insult to riparian injury, the final provision of this policy suggests that even more disruptive activities may be permitted in riparian corridors "if the Board of Supervisors identifies an overriding net public benefit." *Id.* However, this final provision of Policy 1 is so obscurely worded that it is difficult to tell what exactly it intends. Objective B, which addresses protection of riparian resources, is followed by three highly permissive policies that merely encourage or require consideration of biologically-protective measures in riparian areas, and only to the extent "feasible." *Id.*, p. 7-3.

35-5-2

Given the extreme weakness of the protections that the Draft Resource Plan offers riparian areas, and its open allowance of a variety of destructive activities in those areas, the mitigations offered in the EIR to protect wetlands are scarcely reassuring. In short, the EIR proposes that wetlands be made subject to the same policies as riparian corridors. EIR, p. 5-12-13. As with the riparian corridors, strict protective measures are needed for wetlands, not generous invitations to degrade them. We do applaud and urge the inclusion in any final Resource Plan of proposed mitigation Policy 4, which would require the replacement of all impacted wetlands on at least a one-to-one ratio. EIR, p. 5-13.

Water resources

35-5-3

The objectives and goals for the protection of water quality and quantities in the Hayden Hill area are mostly statements that federal and state laws will be obeyed and general admonitions to protect the water resource. Draft Resource Plan, pp. 7-3-4. The EIR on the Draft Plan proposes a mitigation policy that would require monitoring of groundwater and surface water for contamination from mining activities both during and after mine operation. EIR, p. 5-14-15. The EIR states that this monitoring requirement is a strengthening of Policy 2 of Objective B of the Water Resources and Water Quality Goal. However, Policy 2 of Objective B in the Draft Resource Plan has nothing to do with monitoring water for contaminants. Draft Resource Plan, p. 7-4. Have some proposed water policies been omitted from the Draft as circulated to the public, or has the Draft Plan been changed since its public release? Whatever is the case, a monitoring objective along the lines of that proposed in the EIR, but with some minimum standards for frequency and length of monitoring, should be a part of the final Resource Plan.

35-5-1 See response to comment 35-4-4.

35-5-2 Protection of wetlands is provided by State and Federal law, as well as by the addition of wetlands to objectives and policies of Biological Resources Goal 2 in response to the Resource Plan EIR.

35-5-3 Language added to Water Resources and Water Quality Goal Objective A, Policy 1 (page 7-3) will state that the watershed and groundwater recharge areas will be protected by complying with all applicable State and Federal groundwater protection requirements "including those listed in the California Code of Regulation, Title 23, Chapter 15, article 7 (Mining, Waste Management), and the California Porter-Cologne Water Quality Act of 1985." These regulations require groundwater monitoring.

35-6-1 Post-mining land uses are expected to be similar to the pre-mining uses. Concurrent, closure, and post-closure reclamation activities will be directed primarily toward future livestock grazing, watershed protection, and wildlife utilization. The revised Reclamation Plan (Appendix E) includes more detail on reclamation of the site. The final Reclamation Plan, which complies with SMARA, was reviewed and approved by the BLM, USFS, and County in conjunction with the CRWQCB, the ARB and the California Division of Mines and Geology.

35-6-2 It is not the County's intent to be specific at the Resource Plan level. The size and type of project would determine the specific impacts to scenic resources and viewsheds. The Resource Plan is intended to provide a general broad policy framework, within which any mineral development project would be evaluated on a project-specific basis. Within the overall framework, the County has the flexibility within the Conditional Use Permit process to determine if a project meets the goals, policies and objectives of the Hayden Hill Resource Plan. Development of mineral resources is not subservient to visual resources.

35-6-3 This objective/policy regarding access to the cultural resource was moved into the cultural resource section. The historic site itself plus the cemetery will be protected pursuant to compliance with State and Federal regulations including the California Environmental Quality Act (CEQA), as amended, Section 21083.2, the CEQA Guidelines, Appendix K, Archaeological Impacts, the California Code of Regulation, Title 14, Division 6, Chapter 3, the National Historic Preservation Act of 1966, as amended, Section 106, and the Code of Federal Regulation, Title 36, Part 800, Protection of Historic and Cultural Properties.

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Grazing

Policy 3 of Objective B for the Grazing and Timber Goal requires that mining reclamation plans provide for the reclamation of grazing resources in affected areas. Once again we are presented with the situation in which, if this policy is adopted, the proposed Hayden Hill mining project would not comply with it. As demonstrated throughout the comments on the EIR submitted on behalf of Larry Newhall, NRDC, and The Wilderness Society, the proposed project does not currently have a detailed reclamation plan sufficient to offer any reasonable assurances that the Hayden Hill site could be successfully revegetated for grazing or any other use after the cessation of mining activities. See Newhall Comments on Draft EIR throughout, especially pp. 49-52. Until a detailed reclamation plan is formulated and the likelihood of its success analyzed and circulated for public comment in compliance with CEQA and the National Environmental Policy Act (NEPA), many of the potential environmental impacts of both the proposed project and the Draft Hayden Hill Resource Plan cannot be adequately evaluated, and the conclusions as to such impacts in the Draft EIR are plainly unfounded.

Scenic resources

While the Scenic Resources Goal of the Draft Resource Plan and its accompanying objective recognize the importance of "protection of scenic resources and viewsheds in the planning area," Policy 1 obliterates any such protection by making scenic resources utterly subservient to mining operations. Draft Resource Plan, p. 7-5. That is, adverse impacts on the visual quality of the planning area are required to be minimized only "to the extent compatible with mining operations." *Id.* The "mitigations" for impacts of the Draft Resource Plan to the visual resources of the Hayden Hill planning area proposed in the EIR offer no solid protection either. EIR, pp. 5-29-30. Despite the acknowledgments in the EIR that the proposed action would dismantle Hayden Hill and redistribute it across the landscape in the form of a waste rock dump, heap leach pile, and tailings impoundment (see particularly Photograph D, Fig. 4.11-3, in the EIR), the EIR's discussion of the Draft Resource Plan terms the proposed project's visual impacts during mining "less than significant," and asserts that successful reclamation "would ultimately mitigate" the long-term visual impacts. Draft Resource Plan, p. 5-29. Like other statements in the EIR regarding the visual impacts of large-scale mining at Hayden Hill, this brief discussion is disingenuous and misleading.

Recreation resource

Objective A of the Outdoor Recreation Goal, concerning public access to and

35-7-1 public safety at the Hayden Hill historic mining district, seems rather absurd when the sort of mining that the Draft Resource Plan is formulated to accommodate would completely destroy that historic district. Id., p. 7-6.

Noise Element

35-7-2 The EIR acknowledges that "a potential significant unavoidable impact of mining in the Hayden Hill area would be an overall increase in noise levels in this very quiet area." EIR, p. 5-33 (emphasis added). The EIR acknowledges that the proposed action or other major mining activities permitted under the Draft Resource Plan could cause a significant increase in noise levels in the Hayden Hill area, even if Resource Plan and General Plan guidelines were met. Id., pp. 5-32-33. Nonetheless, no specific mitigation measures are proposed in the EIR for the Draft Resource Plan's noise impacts. The policies set forth in the Draft Plan do not take into account the present "very quiet" nature of the area but set fairly high levels of acceptable noise at the planning area's boundaries. Draft Resource Plan, p. 8-1. Further, the noise policies seek to discourage new noise-sensitive land uses in the Hayden Hill area. Id., p. 8-2-3.

35-7-3 Larry Newhall is particularly concerned about noise from proposed mining at Hayden Hill because his current use of his properties in the area as wildlife management areas is a noise-sensitive use. As we showed in our comments on the EIR, that document acknowledges that research is inconclusive on the harmful effects of mining-associated noise such as blasting on nearby wildlife and waterfowl. See Newhall Comments on Draft EIR, p. 19. Until such research is conducted, the County cannot reasonably conclude that the Noise Element of its Draft Resource Plan would adequately mitigate the adverse impacts of mining on the wildlife resources of the area, including Mr. Newhall's property and the State Game Refuge.

Safety Element

37-7-4 The policies of the Draft Resource Plan require the preparation of hazardous materials management plans and emergency preparedness plans for mining activities such as the proposed Hayden Hill mining project. Draft Resource Plan, p. 9-1. Such plans should be formulated in detail and evaluated during the CEQA and NEPA process so that the public and government decisionmakers would be apprised of the likely effectiveness of these plans in mitigating potentially severe environmental impacts from mining. The policies in the Resource Plan should specify that these plans must be formulated early on in any mining approval process and fully examined pursuant to CEQA and NEPA.

35-7-1 See response to comment 35-6-3.

35-7-2 Section 5.4.21, Significant Unavoidable Environmental Effects, of the Draft EIR has been revised to acknowledge that the potential increase in ambient noise levels in the planning area would represent a significant unavoidable impact. Since a significant unavoidable impact due to noise has been identified, if the County approves the Resource Plan, a Statement of Overriding Consideration would need to be adopted.

35-7-3 Impacts to wildlife due to noise generated by mining activities would be similar to those described for the proposed Project. According to a literature search prepared for the Draft EIR/EIS, there is no conclusive evidence that noise emissions similar to those anticipated to be generated for the proposed project would have a significant adverse impact on the behavior, reproduction, and survival of domesticated and wild animals in the planning area. Based on a second literature search conducted in response to comments on the Draft Plan EIR, no additional evidence was uncovered. Potential mining-related noise impacts on wildlife would be less than significant. Any mitigation would be applied on a project-specific basis and reviewed as part of the conditional use permit process.

35-7-4 See response to comment 35-1-1.

Alternative Resource Plans

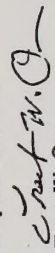
The EIR's examination of alternatives to the Draft Resource Plan is wholly inadequate to meet the requirements of either CEQA or NEPA. These statutes require that detailed alternatives to a proposed action be formulated and their environmental impacts analyzed and compared with those of the proposed action. The alternatives should be sufficiently specific so as to be capable of adoption. When the proposed action in question is the adoption of a Hayden Hill Resource Plan, the alternatives must quite logically be alternative resource plans.

With the exception of the No Project alternative, which would simply leave land use requirements for the Hayden Hill area as they now are, the alternatives presented do not provide any specific regulatory framework as an alternative to that proposed as the Draft Resource Plan. The Reduced Scale Mineral Extraction Alternative does not propose a resource plan, it simply proposes a lower level of mining than the proposed Hayden Hill project would allow. Draft Resource Plan, p. 5-35. Through what provisions would a resource plan restrict mining activities to 50% of those allowed by another plan that was not adopted? This alternative is in reality an alternative to the proposed Hayden Hill project, not to the Draft Resource Plan. Again, the Alternative Location Alternative is an alternative not to the Draft Hayden Hill Resource Plan but to the proposed mining project at Hayden Hill. Id. To meet the requirements of CEQA and NEPA, the County must formulate, analyze, and circulate for public comment alternative resource plans that would be more protective of the resources of the Hayden Hill area than is the Draft Resource Plan.

To conclude, the Draft Hayden Hill Resource Plan is too vague and nondirective to protect effectively the valuable resources of the Hayden Hill area. As a consequence of this lack of specificity, the EIR's conclusions as to the environmental effects of implementing the Draft Plan are at best highly speculative. We urge the County to promulgate a revised, far more detailed and prescriptive Hayden Hill Resource Plan -- and detailed alternative plans -- and to circulate these in draft form for full public comment pursuant to CEQA and NEPA.

Thank you for your consideration of our views. If you or your staff have any questions, please do not hesitate to contact me.

Respectfully yours,


Trent W. Orr
Attorney for Larry Newhall

- 35-8-1 The Resource Plan EIR is not an EIS and is not subject to NEPA. It does not require that alternatives be evaluated at an equal level of detail, as the letter states.
- 35-8-2 Drafting of fully developed alternative Resource Plans as suggested by the comment letter is not required by CEQA. Conceptual alternative plans for resource development are assessed at a general level of detail in the Resource Plan EIR, which is adequate. Additional justification on why alternative locations are not feasible is not necessary. Mining is site-specific. It can only occur where resources exist. Neither the State Division of Mines and Geology nor the County have identified any other mining sites and there are no other known sites where resources exist.
- 35-8-3 The level of detail for the Resource inventory, and the goals, policies, and objectives for development of mineral resources at Hayden Hill is consistent with the County's direction for area plans. The EIR on the Resource Plan is based on the specifics provided in the Plan. Development and assessment of detailed alternative plans is not required pursuant to CEQA.
- 35-8-4 Comment noted.

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9-3-5	Does Not Prevent All Impacts	D/R
10-1-1 19-2-3 20-6-6	Does Not Meet CEQA and NEPA Standards	D/R
14-2-5	Scoping Process Inadequate	D/R
15-2-7	Baseline Studies Not Performed	Chapter 3.0
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3-2-4	Did Not Indicate Where SPCC and ERP Could Be Reviewed	D/R; Section 2.2.8.12
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3-10-4, 3-10-6 20-3-6	Mining Operation	D/R; Sections 2.2.2.2.2.2.4
3-11-9	Blasting effects on wildlife	D/R
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3-5-1, 3-10-2, 3-10-7, 3-11-1, 3-11-2, 3-11-3 8-2-1	Spray vs. drip	D/R; Section 2.2.3.2;

¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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3-10-8, 3-11-5, 3-11-6 20-3-7, 20-4-2, 20-4-5	Hydrologic Design Criteria and Diversion System	Section 2.2.5; "Report on Detailed Design of Heap Leach Pad, Tailings Storage Facility." (KP 1990b); Reclamation Plan (Appendix E); "Report of Waste Discharge" CRWQCB permit application (DKP 1990c); and will be available in the NPDES storm water permit application.
3-11-7 22-2-8	Monitoring	D/R; Section 2.2.6.1.
3-11-8 9-2-3 20-4-6 25-1-1	Access Road (Hayden Hill Road)	D/R; Section 2.2.7.1
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19-23-3 20-4-3	Chemical and reagent storage and use	Table 2.2-4; Section 2.2.8.10
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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

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3-15-10, 3-22-2 19-29-2	Hunting/Wildlife	D/R; Section 4.2.5.2
19-29-1	Historical Mining District	D/R
NOISE		
3-22-6	Correction	D/R
1-6-1	County Regulations	
3-5-4, 3-11-7, 3-11-9, 3-18-1, 3-21-9, 3-22-4, 3-22-5 6-1-5 10-3-5	Wildlife	D/R; Sections 3.14.1,4.14.1;Figure 3.14-1

¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

13.0 DRAFT EIR/EIS COMMENT INDEX TABLE (Continued)

COMMENT REFERENCE Letter-Page-Paragraph	ISSUES/TOPIC	RESPONSE (FINAL EIR/EIS SECTION)¹
OTHER REQUIRED CONSIDERATIONS		
3-23-4	Growth-Inducing Effects	D/R; Section 4.4.3
3-23-5 29-6-3	Energy Consumption and Conservation	D/R; Section 4.4.4
RESOURCE PLAN		
3-25-2, 3-25-3	Miscellaneous	D/R
3-9-1, 3-23-6	Geology and Topography	D/R; Section 5.4.2.2; Appendix E
3-9-1, 3-23-6	Soils	D/R; Section 5.4.3.2; Appendix E
3-23-7, 3-23-8, 3-23-9, 3-23-10, 3-24-1 35-4-2, 35-4-3, 35-4-4, 35-5-2	Vegetation and Wetlands	D/R; Section 5.4.4
3-24-2, 3-24-3, 3-24-4, 3-24-5, 3-25-4	Wildlife and Aquatic Biology	D/R; Sections 5.4.5, 5.4.22
35-5-3	Water Resources	D/R
3-24-6	Housing	D/R; Section 4.2.8.5
3-24-7	Local Government Facilities and Services	Section 5.4.12.2
3-24-8, 3-24-9, 10-9-5	Land Use	D/R; Section 5.4.13
35-6-2	Visual Resources	D/R
3-24-10, 3-24-11 35-6-3	Recreation	D/R
35-7-2	Noise	D/R
3-25-1 35-8-2	Plan Alternatives	D/R; Section 5.4.19.1
3-25-5	Irreversible Changes	D/R; Section 5.4.23
RECLAMATION		
3-13-3, 3-26-10 7-9-1 8-2-4, 8-6-4 11-6-1 13-3-6, 13-3-7 14-1-1, 14-1-2 18-2-3 19-38-2, 19-52-1 28-10-3	Reclamation Bond	D/R; Appendix E
3-13-2 7-8-4 28-6-3, 28-10-2	Corrections and Clarifications	D/R

¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

13.0 DRAFT EIR/EIS COMMENT INDEX TABLE (Continued)

COMMENT REFERENCE Letter-Page-Paragraph	ISSUES/TOPIC	RESPONSE (FINAL EIR/EIS SECTION)¹
8-5-8, 8-6-2 9-1-2, 9-2-1, 9-2-2, 9-3-3 18-2-8 20-5-7 28-6-1, 28-6-2, 28-9-2, 28-14-5	Reclamation Requirements and Mitigation Suggestions	D/R; Appendix E.
3-12-8, 3-26-11, 3-27-1 7-8-6 19-51-3 20-5-2 21-1-5	Reclamation Success	Appendix E
7-7-6 19-49-2 20-1-2 28-14-3, 28-15-1	Reclamation Plan Adequacy	Appendix E
1-2-2 28-5-2, 28-7-2	Stability	Appendix E
3-12-9, 3-13-4 8-6-2, 8-6-3 9-2-5	Fencing	Chapter 2.0
3-26-8 8-3-3 9-2-2	Weed Control	D/R; Appendix E
3-26-9 9-2-4 28-14-4	Grazing	D/R; Appendix E
7-8-2 9-2-2 10-5-5 19-50-3 28-14-6	Growth Media	D/R; Section 3.3; Appendix E
3-7-4, 3-12-10 8-2-6 19-10-1	Diversity of Resulting Vegetation	Appendix E
3-9-1 8-9-3 28-7-1	Grading and Erosion Control Plan	D/R; Figure 2.2-8; Appendix E
28-9-2	Groundwater	Section 4.2.6.2; Appendix E
3-10-1 9-4-6	Land Use	D/R
28-3-3	Williamson Act Lands	D/R; Appendix E
MITIGATION COMPLIANCE PLAN		
3-26-5 8-5-6 19-47-2	Miscellaneous	D/R

¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

13.0 DRAFT EIR/EIS COMMENT INDEX TABLE (Continued)

COMMENT REFERENCE Letter-Page-Paragraph	ISSUES/TOPIC	RESPONSE (FINAL EIR/EIS SECTION)¹
3-26-6	Regulatory Compliance	Section 1.2 of Appendix D
3-25-12 8-5-5	Mitigation Compliance Data Base	D/R; Sections 1.3.2 and 2.4 of Appendix D
3-25-11, 3-25-12 8-5-7 9-1-4 13-3-5 18-2-1	Organization and Management	S/R; Section 1.4 of Appendix D
28-9-4	Compliance Monitoring Reporting and Verification	Subappendix B of Appendix D
3-8-4, 3-25-8, 3-25-9, 3-25-10, 3-26-2, 3-26-3, 3-26-4, 3-27-3	Wildlife and habitat management plan	Section IV, Subappendix B of Appendix D; Appendix I
3-26-7	Mitigation Compliance Contacts	Subappendix D of Appendix D

¹Note: D/R signifies a Direct Response provided to commentor in Chapter 12.0

APPENDICES

Tables of Preparation/Polarization

Notice of Preparation/Public Notification

Notice of Preparation/Preparation



Planning Department
Local Agency Formation
Commission

707 Nevada Street, Room 236
Susanville, California 96130
(916) 257-8311, Ext. 269

NOTICE OF PREPARATION
DRAFT ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL IMPACT STATEMENT
HAYDEN HILL GOLD VENTURE

ROBERT K. SORVAAG
Planning Director
LAFCo. Executive Officer

Lassen County will be the Lead Agency in the preparation of an Environmental Impact Report/Environmental Impact Statement for the project described below:

Project Name: Hayden Hill Gold Venture

Applicant: Hayden Hill Operating Company, Inc.
(A Joint Venture of AMAX Gold and U.S. Gold)

Project: Consideration of a Conditional Use Permit and a Surface Mining Permit and Reclamation Plan by Lassen County; and Approval of the Plan of Operations and Issuance of Letters of Authorization by the Bureau of Land Management and the Forest Service.

The project consists of an open pit gold mine, approximately 256 acres in size, and associated ore processing facilities including a mill/tailing pond system, a heap leach system, gold recovery processing plant, and ancillary facilities and access roads. The total project area is approximately 1000 acres. It would employ approximately 200 full-time employees.

Location: The project is located in Lassen County at Hayden Hill, approximately 54 miles north of Susanville off State Highway 139. (Vicinity of Section 31, T37N, R10E.)

Lassen County will comply with the California Environmental Quality Act (CEQA) in the preparation of this report. The jurisdiction of the Bureau of Land Management, which will be the "lead Federal agency", and the Modoc National Forest related to the project will require compliance with applicable Federal policies and regulations, including the National Environmental Policy Act (NEPA) and Council of Environmental Quality Regulations. These Federal agencies and the County of Lassen have entered into a Memorandum of Understanding dated May 16, 1989 to direct their efforts in complying with the various State and Federal environmental review requirements with a cooperative procedure and a single, comprehensive EIR/EIS document.

To facilitate project review, a scoping meeting has been scheduled by the County for November 16, 1989 at 10:00 a.m.

Notice of Preparation
Page 2

at the Lassen County Administrative Center, 707 Nevada Street, Susanville, California. The purpose of the meeting is to provide involved agencies and the public with an opportunity to learn about the project and to solicit comments to assist the Lead Agency in identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in the EIR/EIS.

An informal workshop is also scheduled for November 30, 1989 at the Adin Community Hall. Beginning at 3:00 p.m., project representatives will be available to answer questions about the project. At 7:00 p.m., a project description presentation will be given, to conclude with a question and answer period.

Lassen County invites comments from the public and public agencies regarding potentially significant environmental impacts and reasonable alternatives and mitigation measures which should be addressed in the EIR/EIS.

Comments should be made in writing and submitted to the Lassen County Planning Department, 707 Nevada Street, Room 236, Susanville, California 96130. In order to insure consideration in the Draft EIR/EIS, comments should be submitted no later than December 15, 1989.

A more complete project description is available for review at the Planning Department. Questions regarding this project may be directed to Merle Anderson at the Planning Department (916) 257-8311, ext. 269.

LASSEN COUNTY PLANNING DEPARTMENT

Robert K. Sorvaag,
Planning Director

RKS:jkp

is/9-03-89/draftEIR



November 1, 1989

LEGAL

Planning Department
Local Agency Formation
Commission

707 Nevada Street, Room 236
Susanville, California 96130
(916) 257-8311, Ext. 269

Lassen County Times
800 Main Street
Susanville, California 96130

ROBERT K. SORVAAG
Planning Director
LAFCo. Executive Officer

Please print the following notice one time on only November 7, 1989.

NOTICE OF PREPARATION
DRAFT ENVIRONMENTAL IMPACT REPORT/
ENVIRONMENTAL IMPACT STATEMENT
HAYDEN HILL GOLD VENTURE

Lassen County will be the Lead Agency, in cooperation with the Bureau of Land Management and the U.S. Forest Service, in the preparation of an Environmental Impact Report/Environmental Impact Statement for the project described below:

Project Name: Hayden Hill Gold Venture

Applicant: Hayden Hill Operating Company, Inc.
(A Joint Venture of AMAX Gold and U.S. Gold)

The project consists of an open pit gold mine, approximately 256 acres in size, and associated ore processing facilities including a mill/tailing pond system, a heap leach system, gold recovery processing plant, and ancillary facilities and access roads. The total project area is approximately 1000 acres. It would employ approximately 200 full-time employees.

Location: The project is located in Lassen County at Hayden Hill, approximately 54 miles north of Susanville off State Highway 139. (Vicinity of Section 31, T37N, R10E.)

To facilitate project review, a scoping meeting has been scheduled by the County for November 16, 1989 at 10:00 a.m. at the Lassen County Administrative Center, 707 Nevada Street, Susanville, California. The purpose of the meeting is to provide involved agencies and the public with an opportunity to learn about the project and to solicit comments to assist the Lead Agency in identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in the EIR/EIS.

An informal workshop is also scheduled for November 30, 1989 at the Adin Community Hall in Adin. Beginning at 3:00 p.m., project representatives will be available to answer questions about the project. At 7:00 p.m., a project description presentation will be given, to conclude with a question and answer period.

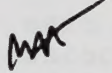
Lassen County invites comments from the public and public agencies regarding potentially significant environmental impacts and reasonable alternatives and mitigation measures which should be addressed in the EIR/EIS.

Comments should be made in writing and submitted to the Lassen County Planning Department, 707 Nevada Street, Room 236, Susanville, California 96130. In order to insure consideration in the Draft EIR/EIS, comments should be submitted no later than December 15, 1989.

A more complete project description is available for review at the Planning Department. Questions regarding this project may be directed to Merle Anderson at the Lassen County Planning Department (916) 257-8311, ext. 269.

LASSEN COUNTY PLANNING DEPARTMENT

Robert K. Sorvaag,
Planning Director

RKS:jkp 

is/9-03-89/CTdraftEIR

Date: December 26, 1991

Page: 1

Initial Study

Submitted to the
Environmental Review Officer

BACKGROUND INFORMATION

1. Name of Proponent: Bayview Mills Development Corporation, Inc.
Address & Phone: 35 Bayview Avenue
Scarborough, ON M1S 1B1
(416) 291-7411

APPENDIX B
Initial Study

2. Location of Project: Bayview Mills, Scarboro, Ontario
3. Land Agency: Bayview Mills
4. Nature and Scope of Project: See the EIR for details

ENVIRONMENTAL IMPACTS

1. Description of all "past" and "future" projects proposed as attached sheets.

2. Water - Will the proposed project:

- | | | |
|---|----------|----------|
| a. Disturbance to existing or in progress hydrological structures? | <u>2</u> | <u>1</u> |
| b. Interference with existing or proposed hydrological structures or water bodies? | <u>2</u> | <u>1</u> |
| c. Change in hydrology or ground surface water resources? | <u>2</u> | <u>1</u> |
| d. The destruction, covering or modification of any water resource or water feature? | <u>2</u> | <u>1</u> |
| e. Any increase in risk to water quality of soils, water bodies or the air? | <u>2</u> | <u>1</u> |
| f. Change to existing or proposed water bodies or channels by erosion, deposition or other means which may affect the channel of a river or stream or the bed or any lake, river or lake? | <u>2</u> | <u>1</u> |
| g. Increase of pollution or debris to water bodies or water bodies, including, but not limited to, debris, litter or other material? | <u>2</u> | <u>1</u> |

3. Air - Will the proposed project:

- | | | |
|--|----------|----------|
| a. Substantial air pollution or deterioration of existing air quality? | <u>2</u> | <u>1</u> |
|--|----------|----------|

Date: October 16, 1989

PRELIMINARY
INITIAL STUDY

I.S. 9-03-89

Completed by the
Environmental Review Officer

BACKGROUND INFORMATION

1. Name of Proponent Hayden Hill Operating Company, Inc.
Address & Phone 55 South Lassen Street
Susanville, CA 96130
(916) 257-2411
2. Location of Project Hayden Hill, Lassen County
3. Lead Agency Lassen County
4. Common Name of Proposal Hayden Hill Gold Venture

ENVIRONMENTAL IMPACTS

(Explanations of all "yes" and "maybe" answers are required on attached sheets)

- | | <u>YES</u> | <u>MAYBE</u> | <u>NO</u> |
|--|------------|--------------|-----------|
| 1. <u>Earth</u> - Will the proposal result in: | | | |
| a. Unstable earth conditions or in changes in geologic substructures? | --- | <u>X</u> | --- |
| b. Disruptions, displacements, compaction or overcovering of the soil? | <u>X</u> | --- | --- |
| c. Change in topography or ground surface relief features? | <u>X</u> | --- | --- |
| d. The destruction, covering or modification of any unique geologic or physical features? | --- | <u>X</u> | --- |
| e. Any increase in wind or water erosion of soils, either on or off the site? | <u>X</u> | --- | --- |
| f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of any bay, inlet or lake? | --- | <u>X</u> | --- |
| g. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards? | --- | <u>X</u> | --- |
| 2. <u>Air</u> - Will the proposal result in: | | | |
| a. Substantial air emissions or deterioration of ambient air quality? | --- | <u>X</u> | --- |
| Continued | | | |

	<u>YES</u>	<u>MAYBE</u>	<u>NO</u>
<u>Air (Continued)</u>			
b. The creation of objectionable odors?	___	<u>X</u>	___
c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	___	___	<u>X</u>
3. <u>Water</u> - Will the proposal result in:			
a. Changes in currents, or the course or direction of water movements?	<u>X</u>	___	___
b. Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff?	<u>X</u>	___	___
c. Alterations to the course or flow of flood waters?	___	___	<u>X</u>
d. Change in the amount of surface water in any water body?	___	<u>X</u>	___
e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	___	<u>X</u>	___
f. Alteration of the direction or rate of flow of ground waters?	___	<u>X</u>	___
g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	___	<u>X</u>	___
h. Substantial reduction in the amount of water otherwise available for public water supplies?	___	<u>X</u>	___
i. Exposure of people or property to water related hazards such as flooding?	___	___	<u>X</u>
4. <u>Plant Life</u> - Will the proposal result in:			
a. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?	<u>X</u>	___	___
b. Reduction of the numbers of any unique, rare or endangered species of plants?	<u>X</u>	___	___
c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	___	<u>X</u>	___
d. Reduction in acreage of any agricultural crop?	___	<u>X</u>	___
5. <u>Animal Life</u> - Will the proposal result in:			
a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish, benthic organisms or insects)?	___	<u>X</u>	___

	<u>YES</u>	<u>MAYBE</u>	<u>NO</u>
<u>Animal Life (Continued)</u>			
b. Reduction of the numbers of any unique, rare or endangered species of animals?	___	<u>X</u>	___
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	___	___	<u>X</u>
d. Deterioration to existing fish or wildlife habitat?	___	<u>X</u>	___
6. <u>Noise</u> - Will the proposal result in:			
a. Increases in existing noise levels?	<u>X</u>	___	___
b. Exposure of people to severe noise levels?	___	<u>X</u>	___
7. <u>Light and Glare</u> - Will the proposal produce new light/glare?	<u>X</u>	___	___
8. <u>Land Use</u> - Will the proposal result in a substantial alteration of the present or planned land use in the area?	___	<u>X</u>	___
9. <u>Natural Resources</u> - Will the proposal result in:			
a. Increase in the rate of use of any natural resources?	___	<u>X</u>	___
b. Substantial depletion of any nonrenewable natural resource?	___	<u>X</u>	___
10. <u>Risk of Upset</u> - Does the proposal involve a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	<u>X</u>	___	___
11. <u>Population</u> - Will the proposal alter the location, distribution, density, or growth rate of the human population of an area?	___	<u>X</u>	___
12. <u>Housing</u> - Will the proposal affect existing housing, or create a demand for additional housing?	___	<u>X</u>	___
13. <u>Transportation/Circulation</u> - Will the proposal result in:			
a. Generation of substantial additional vehicular movement?	<u>X</u>	___	___
b. Effects on existing parking facilities, or demand for new parking?	<u>X</u>	___	___
c. Substantial impact upon existing transportation systems?	<u>X</u>	___	___
d. Alterations to present patterns of circulation or movement of people and/or goods?	<u>X</u>	___	___

Continued

	<u>YES</u>	<u>MAYBE</u>	<u>NO</u>
<u>Transportation (Continued)</u>			
e. Alterations to waterborne, rail or air traffic?	___	___	<u>X</u>
f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	___	<u>X</u>	___
14. <u>Public Services</u> - Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?	<u>X</u>	___	___
b. Police protection?	___	<u>X</u>	___
c. Schools?	___	<u>X</u>	___
d. Parks or other recreational facilities?	___	<u>X</u>	___
e. Maintenance of public facilities, including roads?	<u>X</u>	___	___
f. Other governmental services?	___	___	___
15. <u>Energy</u> - Will the proposal result in:			
a. Use of substantial amounts of fuel or energy?	___	___	<u>X</u>
b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?	___	<u>X</u>	___
16. <u>Utilities</u> - Will the proposal result in a need for new systems or substantial alterations to the following utilities:			
a. Power or natural gas?	___	<u>X</u>	___
b. Communications systems?	___	<u>X</u>	___
c. Water?	<u>X</u>	___	___
d. Sewer or septic tanks?	<u>X</u>	___	___
e. Storm water drainage?	<u>X</u>	___	___
f. Solid waste and disposal?	<u>X</u>	___	___
17. <u>Human Health</u> - Will the proposal result in:			
a. Creation of any health hazard or potential health hazard (excluding mental health)?	<u>X</u>	___	___
b. Exposure of people to potential health hazards?	<u>X</u>	___	___
18. <u>Aesthetics</u> - Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	___	<u>X</u>	___

- | | <u>YES</u> | <u>MAYBE</u> | <u>NO</u> |
|---|------------|--------------|-----------|
| 19. <u>Recreation</u> - Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities? | ___ | <u>X</u> | ___ |
| 20. <u>Archaeological/Historical</u> - Will the proposal result in an alteration of a significant archaeological or historical site, structure, object or building? | ___ | <u>X</u> | ___ |
| 21. <u>Mandatory findings of significance:</u> | | | |
| a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or pre-history? | <u>X</u> | ___ | ___ |
| b. Does the project have the potential to achieve short-term, to the disadvantage of long-term environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future) | ___ | <u>X</u> | ___ |
| c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but the effect of the total of those impacts on the environment is significant) | <u>X</u> | ___ | ___ |
| d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ___ | <u>X</u> | ___ |

RECOMMENDED MITIGATION MEASURES & ANSWERS TO ALL "YES" AND "MAYBE" ANSWERS BELOW:

See attached comments.

DECISION OF THE ENVIRONMENTAL REVIEW OFFICER

On the basis of this initial evaluation:

- ☐ I find that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that, although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on this sheet (or attachment) have been added to the project. A NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment and that an ENVIRONMENTAL IMPACT REPORT is required.

Signature: _____

Environmental Review
Officer

Date: _____

RECOMMENDATION OF THE ENVIRONMENTAL REVIEW OFFICER

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION is recommended to be prepared.
- ☐ I find that, although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on this sheet (or attachment) have been added to the project. A NEGATIVE DECLARATION is recommended to be prepared.
- ☒ I find that the proposed project MAY have a significant effect on the environment and that an ENVIRONMENTAL IMPACT REPORT is recommended to be prepared.

Signature _____

for:

Environmental Review
Officer

Date: _____

Oct. 16, 1989

WATER RIGHTS SUMMARY

The Project will use existing groundwater. California does not have a regulatory system for the use of groundwater.

Because the groundwater pumped for the Project is to be used while the groundwater is pumped, it is considered to be an "overlying" use. Overlying rights are those rights, with certain exceptions, are created in those portions of the resource supply for beneficial use.

Overlying rights are superior to "appropriative" rights. Appropriative rights are created by taking water which is surplus to the reasonable beneficial needs of the overlying users for uses made in the future. If a shortage occurs, the appropriative user must share pro rata with a "safe yield" is maintained for the overlying rights holder.

APPENDIX C Water Rights Summary

WATER RIGHTS SUMMARY

The Project will use percolating groundwater. California does not have a regulatory system for the use of percolating groundwater.

Because the groundwater pumped for the Project is to be used within the groundwater basin from which it is pumped, it is considered to be an "overlying" use, or right. Under California judicial decisions, such overlying rights, with certain exceptions, are entitled to share reasonably with other overlying rights in the common supply for beneficial uses.

Overlying rights are superior to "appropriative" rights, which are established by taking water which is surplus to the reasonable beneficial needs of the overlying users for uses outside the basin. If a shortage occurs, the appropriators can be cut back judicially until a "safe yield" is maintained for the overlying rights holders.

APPENDIX D
Mitigation Compliance and Program

MITIGATION COMPLIANCE PROGRAM
KAYDEN HILL PROJECT
LARSEN GOLD MINING, INC.

Prepared by
Larson County
707 Nevada Street
Larson, California 95130

Approved by
Larson Gold Mining, Inc.
P.O. Box 1024
Searsville, California 95130

Prepared by
Benton Robinson and Edward G. S. J. Jr.
3212 Santa Verde Street
Lakewood, California 90221

SRK Project No. 29001
September 1991

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MITIGATION COMPLIANCE PROGRAM HAYDEN HILL PROJECT LASSEN GOLD MINING, INC.

3.0	PREPARED FOR:	4
3.1	Lassen County	4
3.2	707 Nevada Street	4
3.3	Susanville, California 96130	4

Prepared for:
Lassen County
707 Nevada Street
Susanville, California 96130

4.0	APPLICANT:	5
4.1	Lassen Gold Mining, Inc.	5
4.2	P.O. Box 1028	5
4.3	Susanville, California 96130	5

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1.0 INTRODUCTION

1.1 Proposed Action

The Hayden Hill Project (Project) is a proposed open pit precious metals mine located in the Hayden Hill Mining District in northern Lassen County, California. The Project site is comprised of about 2800 acres of both Federal and patented lands. Conventional heap leach processing and milling would be used to recover gold and silver using an ore processing rate of about 5.6 million tons per year for approximately eight years. At project completion, about 950 acres of the site would be disturbed and would have to be reclaimed.

The primary environmental resource categories potentially affected by project development and addressed in the Hayden Hill Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS) are geology, topography, soil, vegetation, wetlands, range, wildlife, water, air quality, cultural resources, socioeconomics, land use, visual resources, noise, transportation, and recreation. Potential adverse impacts to the environment will be mitigated through regulatory requirements and through measures incorporated in Project planning and design. This Mitigation Compliance Program (MCP) has been developed to provide a system for monitoring and reporting on compliance with requirements and conditions set forth by the U.S. Bureau of Land Management (BLM) and Lassen County (County), (both lead agencies), and the U.S. Forest Service (USFS) in the EIR/EIS and subsequently adopted by each agency in approving the Project.

1.2 Regulatory Compliance

This program has been prepared, and in its final form will be adopted, in compliance with Section 21081 of the Public Resources Code, as initiated by State of California Assembly Bill 3180 (AB 3180), and in compliance with Federal requirements set forth in 40 Code of Federal Regulations (CFR), Part 1505.2 and 1505.3, for compliance with the National Environmental Policy Act (NEPA)(Public Law 91-190).

Section 21081 of the Public Resources code requires that State and local agencies adopt a monitoring and reporting program for changes to the Project which the agencies have adopted or made a condition of Project approval as a result of a negative declaration or an EIR. This program for the Project is designed to provide the structure for conducting the required mitigation monitoring and reporting that are subject to the findings required by Section 21081(a).

The regulations of the Federal Council on Environmental Quality (CEQ) require in the Record of Decision (ROD) for cases requiring environmental impact statements that:

- "... a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation." (40 CFR, 1505.2[c])
- "Agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases. Mitigation ... and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consenting agency." (40 CFR, 1505.3)

This MCP is designed to fulfill the intent of these Federal requirements by providing the mechanism to monitor compliance with and enforcement of each mitigation condition specified in the ROD.

1.3 Purpose of the Mitigation Compliance Program

This MCP presents a system for monitoring, reporting, and verifying compliance with mitigation requirements. It also provides the procedures for correcting situations of non-compliance and for resolving disputes regarding compliance. The program specifies the roles and responsibilities of participants and provides report forms for compliance monitoring. For purposes of the MCP, the mitigation measures are those identified in the EIR/EIS, plus other conditions which are within the jurisdiction of the County, BLM, and/or USFS and will be conditions of approval to the County Conditional Use Permit and/or the BLM/USFS Plan of Operations.

The primary objective of the MCP is to assure that Project activities are conducted in compliance with agency requirements and permit conditions. Another objective of the MCP is to describe the means by which the County, BLM, and USFS can verify that the Applicant (Project Owner/Operator) is implementing the required mitigation measures. In the event that the required mitigation measures are not implemented, the MCP outlines the reporting mechanisms for notification to the County, BLM, and USFS of a non-compliance status. In such instances, the MCP identifies the agency responsible for determining and authorizing remedial action(s), if necessary.

1.3.1 Use by Lead and Cooperating Agencies

The MCP has been designed in compliance with NEPA and the California Environmental Quality Act (CEQA) for use by the County, BLM, and USFS as the agencies responsible for assuring that the Project Owner/Operator performs the mitigation measures. Some permit approval conditions adopted by these agencies will be similar, and coordination between the agencies will avoid duplication of efforts and

reduce paperwork. Such coordination may at times require close County, BLM, and USFS oversight of the day-to-day implementation of the MCP. At other times the conduct of occasional verification procedures will be all that is necessary.

The MCP describes how field observations of construction and operations activities will be recorded and reported on a regular basis. The data collected will be compiled to create an MCP data base which will be developed and maintained as part of normal Project operations. The County, BLM and USFS will have access to the data base which, together with special environmental studies, will provide the agencies with an up-to-date status for each individual mitigation condition, actual environmental impacts as they occur, and the effectiveness of any necessary remediation.

The MCP is structured to accommodate the requirements and conditions imposed by the different agencies and to incorporate new requirements and conditions that may be added during the eight-year mine life as a result of changes to the plans. Such changes will require approval from the appropriate agencies.

1.3.2 Use by Other Regulatory Agencies

Numerous permits and approvals by other local, State, and Federal agencies will be needed for aspects of the Project (see Subappendix A of this MCP document, List of Permits and Approvals). Each of these permits may include specific requirements established by the authorizing agency.

The procedures set forth in this MCP are for monitoring specific requirements set forth by the State, County, BLM, and USFS in their approval documents. With minor modifications, these procedures also could be used by other permitting agencies in order to fulfill their obligations under CEQA and NEPA and to assure Project compliance with the conditions of their permits. These agencies could utilize the same information data base, thereby avoiding redundancy in those instances when a requirement specified by one agency is either the same as or similar to that specified by another agency. The County will coordinate with State agencies whose requirements interrelate with the County's responsibilities.

1.4 Overview of Mitigation Compliance Program

Personnel from the County, BLM, USFS, and Project Owner/Operator are all involved in implementation of the MCP. The primary role of the County, BLM, and USFS is the administration of the MCP, review of required reports, and verification of compliance. The role of the Project Owner/Operator personnel is the day-to-day monitoring and reporting associated with implementation of the compliance program. The Project Owner/Operator shall retain professionals, approved by the County, BLM, and USFS, to monitor the performance of mitigation conditions. The primary Project representative is the Mitigation Compliance Coordinator (MCC), appointed by the Project Owner/Operator, subject to the approval of

the County, BLM, and USFS. Assistance in mitigation monitoring may be provided by environmental monitors (EM) and/or resource specialists (RS), who assist the MCC on an as-needed basis.

The compliance process involves systematic monitoring and reporting on the initiation, effectiveness, and completion of mitigation measures. The monitoring observations and findings will be recorded on two pre-printed forms: the Environmental Compliance Monitoring (ECM) form and the Out of Compliance Notification (OCN) form. The monitoring record will be compiled in interim, quarterly, and annual reports for submittal to the County, BLM, and USFS for review and verification.

1.5 Contents of Mitigation Compliance Program

The contents of this MCP have been arranged to provide a clear and accurate description of how compliance with mitigation conditions contained in County, BLM, and USFS permits and approvals will be monitored for the Project.

The remainder of the MCP is organized into the following primary headings:

- **2.0 Organization and Management** - This section identifies the organizations involved in mitigation compliance, with a brief description of the role of each.
- **3.0 Program Implementation** - This section describes the elements of the compliance program: monitoring, reporting, remediation, verification, personnel, resolution, and plan modification.
- **4.0 Acronyms and Abbreviations** - This section provides an alphabetical listing of the acronyms and abbreviations which are contained in this document.
- **Subappendix A: List of Permits and Approvals** - A list of the major permits and approvals required for the Project and the agencies involved is provided.
- **Subappendix B: Mitigation Measures and Procedures for Compliance Monitoring, Reporting, and Verification** - This subappendix contains a description of each mitigation measure, the procedure for monitoring compliance, reporting procedures, verification

procedures and record keeping. These requirements and procedures will be completed when final permit conditions are developed by each agency.

- **Subappendix C: Compliance Monitoring Forms** - This subappendix contains standardized forms for use in reporting mitigation compliance status.
- **Subappendix D: Mitigation Compliance Contacts** - These are the County, BLM, USFS, and Owner/Operator representatives for program administration and implementation.

2.0 ORGANIZATION AND MANAGEMENT

This MCP is designed so that final responsibility for permit compliance review and verification remains with the County, BLM, and USFS while the burden of day-to-day monitoring and reporting is the responsibility of the Project Owner/Operator. The intent of the organization structure shown is to provide objective and timely monitoring, reporting, and verification of compliance. The organization is such that the obligation for providing proof of compliance is on the Project Owner/Operator, while the role of the agencies is to verify the accuracy and completeness of compliance documentation.

The responsibility for administering the program rests with the County, BLM, and USFS as the primary permitting agencies for the Project; involvement of other agencies would occur through them. Unless it is proprietary, project-related information becomes part of the public record when it is accepted by the County, BLM, or USFS. It then is accessible by other agencies and the public.

Day-to-day program implementation is the responsibility of the Project Owner/Operator. The MCC, appointed by the Project Owner/Operator subject to the approval of the County, BLM, and USFS, is the individual responsible for ensuring that many of the monitoring and reporting duties are performed.

Descriptions of the roles of the County, BLM, USFS, Project Owner/Operator, other agencies, and the public are presented in the following sections.

2.1 Lassen County

The County has approval authority over unincorporated land not directly regulated by State and Federal government agencies or Indian tribes. The County is responsible for implementing the California Surface Mining and Reclamation Act (SMARA) in accordance with both the County General Plan and County zoning and land use ordinances. The County is also the Lead Agency for compliance with CEQA. This

zoning and land use ordinances. The County is also the Lead Agency for compliance with CEQA. This agency will designate a County employee or contracted representative under the direction of the Planning Director as the point of contact for Project mitigation compliance administration (see Subappendix D, Mitigation Compliance Contacts).

The County interacts directly with the BLM during implementation of the MCP to verify the accuracy of monitoring, reporting, and compliance with conditions of approval. As noted below for the BLM, the nature and scope of shared responsibility relative to this Project will be consistent with any agreement that may be entered into between the BLM and County. The County will coordinate an annual coordination meeting with the involved agencies and the Owner/Operator.

2.2 U.S Bureau of Land Management and U.S. Forest Service

The BLM and USFS are the agencies responsible for administering programs for public lands in the Project area. The BLM and USFS are responsible for NEPA compliance and for approval of the Plan of Operations, rights-of-way, and other Federal permits/approvals for the Project. The participating BLM office is the Alturas Resource Area office. The participating USFS office is the Modoc National Forest Big Valley Ranger District. Employees at the BLM and USFS offices will be designated as the agencies' points of contact for administration of the mitigation compliance program (see Subappendix D, Mitigation Compliance Contacts).

For issues associated with this MCP, the BLM and USFS may interact directly with the County. The nature and scope of shared responsibility relative to this Project will be consistent with any agreement that may be entered into between the County, BLM, and USFS.

2.3 Project Owner/Operator

The Project Owner/Operator is responsible for compliance with the conditions of Project permits and approvals as specified by the BLM and County. When requested, the Project Owner/Operator will interact with the BLM and County to provide assistance with administration of the MCP in matters of monitoring, reporting, verification, and resolution of compliance issues. The MCP point of contact for the Project Owner/Operator is the MCC (see Subappendix D).

The Project Owner/Operator is also responsible for managing Project construction and operation activities in a manner consistent with maintaining compliance with mitigation requirements. If necessary, the Project Owner/Operator has the responsibility to halt or redirect construction or operations in a particular area in the event there is the potential for violation of compliance requirements.

The MCC plays a central role in assuring that the mitigation compliance program activity is properly completed. The MCC will be the hands-on manager of compliance monitoring activities, in addition to being the primary point of contact between the Project Owner/Operator and the agencies. The MCC is involved in almost all elements of the program, with responsibilities that include planning and conducting compliance monitoring; assuring the quality and accuracy of routine monitoring reports; producing interim, quarterly, and annual reports; and updating the MCP, as necessary.

2.4 Other Agencies and the Public

Other agencies may have direct interaction with or be advisory to the County, BLM, and USFS, but would not be directly involved with administering BLM/County mitigation compliance activities. Information in reports submitted to the County, BLM, and USFS would, unless proprietary, be part of the public record and, as such, available to other agencies. This information also would be available to the public and organizations having an interest in the Project.

3.0 PROGRAM IMPLEMENTATION

The primary program activities are monitoring, reporting, verification, and resolution of compliance status. The monitoring and reporting are functions of the Project Owner/Operator and are subject to verification by the County, BLM, and USFS. Verification is the responsibility of the Lead Agencies. Data management is the responsibility of the County.

3.1 Monitoring

Monitoring will occur during all three Project phases: construction, operations, and reclamation. The type and frequency of monitoring will depend upon the nature of each mitigation measure and requirement as presented in Subappendix B, Mitigation Measures and the Procedures for Compliance Monitoring, Reporting, and Verification. Monitoring may involve activities such as reviewing plans and specifications, observing actual construction, providing periodic checks of water levels in wells, regularly inspecting Project facilities during actual operations, and recording revegetation success rates. Based on actual permit requirements, these monitoring activities may occur at any specified interval, such as daily, weekly, monthly, or quarterly, to be determined by the County, BLM, and/or USFS.

It is expected that most monitoring would be conducted by the MCC. However, it also may be done under his direction by an EM or RS, depending on the level of technical expertise required. Monitoring will involve first-hand inspection and observation with appropriate documentation and, as necessary, photographs.

Monitoring will be an integral aspect of Project operations, with normalized procedures to maintain compliance with permit requirements. In order to enhance the effectiveness of monitoring, there is a procedure for Project personnel to report problems (out of compliance or, potentially, out of compliance situations) to the MCC for subsequent reporting to the County and the BLM or USFS. Such situations will be evaluated and remedial action taken. Ongoing monitoring of the situation will be incorporated into the normal monitoring procedure. The process of monitoring and reporting is outlined in Figure 3.1, Monitoring. The timing of monitoring activities will be determined for each individual mitigation measure. It is anticipated that a number of activities may be monitored on a daily basis during peak activity periods, with decreasing frequency as activities are curtailed and as on-site conditions stabilize. For example, following reclamation and the initial establishment of vegetation, comprehensive monitoring of revegetated and reclaimed areas may occur as infrequently as annually.

3.2 Reporting

Federal law makes it a crime punishable by a fine of not more than \$10,000 or imprisonment for not more than five years to knowingly and willingly falsify, conceal, or cover up any material fact or make false statements in any matter within BLM's and USFS's jurisdiction (Part 18, United States Code [U.S.C] § 1001). This provision would be applicable to the Project Owner/Operator and the MCC, as its willful abuse would be punishable by law. The existence of this Federal sanction provides assurance as to the reliability of the proposed environmental reporting process.

The outcome of the monitoring process is reporting, shown in Figure 3.2, Reporting. Each monitoring inspection results in the generation of an ECM report and, for an out-of-compliance condition, an OCN report. The ECM report (see Subappendix C, Compliance Monitoring Forms) will state whether the activity is being conducted in or out of compliance with specific requirements. If the condition is in compliance, it may be deemed complete, or additional measures may be necessary to maintain a status of compliance. If the condition is out of compliance, an OCN report is completed and assigned a priority level (Category 1, 2, or 3) for the application of remedial measures. The appropriate remediation will be selected based on the affected resource and the extent to which it is out of compliance. The adequacy of remedial measures will be determined by the County, BLM, and USFS.

As shown in Figure 3.2, there are five types of reports: (1) ECM reports, (2) OCN reports, (3) interim reports, (4) quarterly reports, and (5) annual summary reports. Distribution is determined by the report type and/or the responsible agency, as shown in Figure 3.2.

3.2.1 Environmental Compliance Monitoring Reports

The ECM reports will be distributed internally, and the information will be incorporated into the MCP data base, as shown in Figure 3.3, Compliance Report Distribution. These reports consist of the report form and additional backup material (such as plans or drawings) as specified in Subappendix B, Mitigation Measures and Procedures for Compliance Monitoring, Reporting, and Verification. The ECM reports describe the progress of activity subject to the mitigation measures, and may contain technical and detailed information.

The data gathered from the ECM reports will be compiled and entered into the MCP data base, a critical tool for the organization and tracking of compliance activities. It is anticipated that this data base may be of scientific interest and of assistance to decision makers in the development of conditions for other projects. The structure of the data base will be developed by the County, in consultation with the other compliance program administrators. It will contain information from the monitoring activity allowing for reference to an agencies specific approval requirements. It also will contain data fields for entry of information from ECM and other monitoring reports, interim reports, and special studies. Data will be available to the MCC, BLM, and USFS upon request.

3.2.2 Out of Compliance Notifications

The categories of non-compliance that may be assigned in an OCN are explained below:

- A determination of Category 1 is assigned when remediation is necessary, but the timing is not critical. A Category 1 condition would not present a hazard to human health and safety or the environment and so could be routinely remediated as a part of regular construction or operations activities. An example of a Category 1 condition could be a structure not painted as stipulated. In this example, remediation would require that the structure be re-painted the appropriate color.
- A determination of Category 2 status is assigned when prompt remediation is necessary. That is, remediation would need to be undertaken outside of routine activities in order to be accomplished within an appropriate time frame. A Category 2 condition would present a potential hazard to environmental resources and would need to be remediated on a timely basis. An example of a Category 2 status could be the sloughing of an open ditch designed to carry storm run-off, thereby diminishing its capacity. In this example, remediation would require that the ditch be repaired prior to the occurrence of a storm event.

- A determination of Category 3 status is assigned when immediate remediation is necessary. This category is assigned when activity must be immediately stopped and remedial action undertaken immediately. A Category 3 condition could degrade or destroy a resource, so the activity causing the condition must be stopped and/or directed to a different area. An example of a Category 3 status could be a construction activity which uncovers archaeological resources during earth moving. In this example, remediation would require that the earth moving activity be stopped or redirected, the responsible agency be immediately notified, and a resource recovery plan be developed.

An OCN will be distributed based on the urgency of necessary remediation, utilizing telecommunication tools, as appropriate (see Figure 3.3, Compliance Report Distribution).

Notification of Category 1 status (requiring routine remedial action) will be distributed, as soon as possible, but no later than 48 hours, to the Project Owner/Operator to ensure appropriate remediation and will be summarized for distribution in the quarterly and annual reports.

Notification of Category 2 status (requiring rapid remedial action) will be distributed within eight hours to the Project Owner/Operator and as soon as possible, but no later than 48 hours to the County, BLM, and USFS. The notification will specify the condition out of compliance and the planned remediation.

Category 3 status (requiring immediate remedial action) will require immediate notification of the Project Owner/Operator and appropriate Federal, State, and local agencies.

The agency having primary jurisdiction over any element of the Project which is determined to be out of compliance may overrule the MCC in the determination of the category and the required remedial action.

3.2.3 Interim Reports

Interim reports may be required for certain mitigation activities where frequent feedback is desired by the agencies. For instance, the BLM currently requires that any wildlife deaths resulting from mining operations be reported monthly. The Project will similarly be required to monitor any such effect on wildlife and report the results to BLM as an interim report.

3.2.4 Quarterly Reports

Quarterly reports will contain summaries of the ECM, OCN, and interim reports generated during the designated quarter and a brief analysis of the status of each mitigation condition addressed. In addition, they will show the compliance status of all mitigation conditions. Quarterly reports will also contain a summary of the Project status and modifications to the Project. Additional requirements which may be

generated by Project modifications will be distributed in the quarterly report and included as revisions to this MCP.

Quarterly means the period ending with the standard calendar quarters (i.e., the last day of March, July, September and December). Quarterly reports shall be due within 14 days of the end of the quarter, unless otherwise agreed upon by the operator, the Lead Agencies and the agency of jurisdiction.

3.2.5 Annual Reports

In addition to the end-of-year quarterly report, an annual report will be prepared. This will be a summary of the previous year's quarterly reports, plus major occurrences, such as alteration to the adopted conditions which may have been approved by the applicable agencies or summaries of a Compliance Resolution Conference (CRC) which may have occurred. The annual report will contain a brief analysis of the activities taken to meet the permit conditions, the status of specified conditions, the effectiveness of mitigation and monitoring activities, additional requirements for completing/maintaining compliance, and recommendations for changes in mitigation for monitoring. In addition, the annual report will contain a summary of the year's activities and, if appropriate, Project modifications subject to the approval of the responsible agency.

3.3 Verification

Verification of mitigation condition compliance is the obligation of the responsible agency. The County, BLM, and USFS may perform verification activities, or may authorize the performance of certain activities by other agencies, in accordance with the Memorandum of Understanding (MOU), with the necessary expertise. The MCC will be involved in verification activities, as the person with the greatest ongoing familiarity with the various mitigation requirements.

Verification activities may take many forms, including consultation with another agency (i.e., the County may consult the BLM or USFS), a query to the MCC, or planned or unannounced on-site inspections. Verification activities will occur at agency discretion, consistent with the rights of project management and agency practices. Permitting agencies have the right of entry to conduct on-site inspection of Project facilities and activities, monitoring procedures, and the MCP data base. In addition, periodic audits may be required. The agencies, MCC and Owner/Operator will attend an annual coordination meeting, scheduled by the Lead Agency.

3.4 Resolution of Compliance Status

3.4.1 Informal Enforcement Process

It is to the advantage of all parties involved to resolve potential disputes as simply and as rapidly as possible, so that unnecessary resources are not expended. To this end, the MCP provides an informal mechanism to resolve such disputes. Regardless of approach, final resolution is the responsibility of the permitting agency.

If a dispute over compliance arises, there would be a CRC to provide the responsible agency and Project Owner/Operator and/or MCC the opportunity to discuss the issue and find an acceptable solution. This type of meeting would enable potential conflicting opinions and concerns to be aired, points of negotiation to be discovered, and creative solutions to be reached. Consultation of experts knowledgeable on the issue may be required. The CRC could produce meeting minutes or a memorandum of agreement, to be formally adopted as the agreed upon course of action. The decisions reached at such a conference would be included in subsequent quarterly and/or annual reports.

Should this informal approach not be successful, then a formal enforcement process would be initiated, as described in the following section.

3.4.2 Formal Enforcement Process

If opposing views cannot be reconciled in a CRC, then a more formal procedure could be invoked. If BLM is a party to the dispute, a Notice of Non-compliance would be issued by the Alturas Resource Area office. The Project Owner/Operator could appeal the Notice to the BLM State office. Depending on the type of non-compliance the USFS would either act through the BLM or pursue remediation under the USFS permit.

If the County is a party to the dispute, the regulations and procedures contained in the County Building Code and Zoning Code would apply to its resolution. These procedures begin with the issuance of a Correction Notice by the County, stating the nature of the violation, the necessary remediation measure, and the schedule for remediation activities. The Project Owner/Operator may reply to this notice and discuss resolution of the issue with the County representative. If the violation is not remediated within the schedule specified in the Correction Notice, an Order to Comply is issued and, if applicable, Notice to Stop Work. If the Order to Comply is subject to dispute, the County issues a notification that an Infraction Citation will be issued on a particular date. If the remediation measure is not undertaken prior to the Infraction Citation issuance date, a citation is issued by the County. If there is continued non-

compliance or if the matter is subject to Infraction Citations, the County may move for revocation of permits and termination of operation.

If a State agency becomes involved in a non-compliance issue, that State agency will either act through the County as Lead Agency or act within its own enforcement procedures. Should a Federal agency become involved in a non-compliance issue, that Federal agency will either through the Lead Federal agency or its own enforcement procedures. The BLM may decide to allow other Federal Agencies to legally act on their own behalf.

3.5 Personnel

3.5.1 Mitigation Compliance Coordinator

Mitigation monitoring will be managed directly by the MCC. The position of the MCC will be full-time and funded by the Project Owner/Operator, with office facilities on the Project site. The MCC is responsible for producing reports and has the authority to address compliance issues as they arise. The MCC is accountable to the County, BLM, USFS, and Project Owner/Operator for the accuracy and completeness of reports and activities. This relationship establishes the framework for independent and objective compliance monitoring on an operational basis.

The MCC will be an environmental professional appointed and employed by the Project Owner/Operator (subject to approval by the County, BLM, and USFS, such approval not to be unreasonably withheld), with management and multidisciplinary technical capabilities and familiarity with the operational procedures of an open pit mining facility. The MCC will:

- Maintain a working knowledge of the permit requirements and conditions, construction, operations, reclamation schedules and activities, revisions made to permit conditions, and revisions to Project construction and operations;
- train and direct the EM/RS in data gathering activities and special studies;
- file required reports with the necessary documentation;
- provide briefings, as needed, to the County, BLM, and USFS, Project Owner/Operator, and construction and operations contractors;
- schedule meetings, prepare agendas, record and distribute minutes; and

- have the authority to recommend stoppage or redirect construction, operations, and reclamation activities in the event an activity presents a threat to compliance.

As illustrated in Figure 3.2, the reporting of mitigation compliance status is primarily the responsibility of the MCC, who is responsible for the accuracy and quality of reports and for proper report distribution. The reporting functions of the MCC include:

- Immediately notifying Project management of a potential or existing out-of-compliance condition;
- reporting out-of-compliance conditions to the County, BLM, and USFS;
- providing remediation of out-of-compliance conditions through consultation with the County, BLM, USFS, and Project Owner/Operator;
- performing quality assurance checks on reports submitted by the EM/RS; and
- preparing the quarterly and annual reports for submission to the County, BLM, USFS, and Project Owner/Operator.

3.5.2 Environmental Monitors

The EM serves as an extension of the MCC in performing mitigation monitoring during construction, operations, and reclamation. These persons may be specialists in one or more environmental resources (such as water, biology, air quality) and/or other persons with qualifications appropriate to the mitigation measure being implemented.

The EM assists the MCC in fulfilling reporting requirements. Responsibilities include:

- Preparing and submitting reports to the MCC which shall be maintained as part of the MCP data base; and
- immediately notifying the MCC of a potential or existing out of compliance condition.

3.5.3 Resource Specialists

The purpose of the RS is to perform special environmental studies or monitoring. The RS will be technical experts in areas necessary to assure compliance with specific mitigation conditions. Over the

life of the Project, specialists in many resources, such as aquatic biology and wetlands vegetation, may be utilized. Special studies may be required for various reasons, including the conditions of approval, evaluating compliance, or determining the effectiveness of remediation.

The RS participate in reporting by:

- Keeping the MCC apprised on a weekly or more frequent basis of their activities, findings, and recommendations;
- preparing and submitting reports to the MCC, which will be maintained as part of the MCP data base;
- providing specific information to the MCC for quarterly and annual reports; and
- immediately notifying the MCC of a potential or existing out-of-compliance condition.

3.6 Program Modification

It is recognized that changes could occur during the eight-year life of the Project that would necessitate changes in the MCP. For example, redundant results from a weekly on-site monitoring requirement could result in a request for a less frequent monitoring schedule. An evaluation of the proposed change would need to be made by agency staff based on considerations such as:

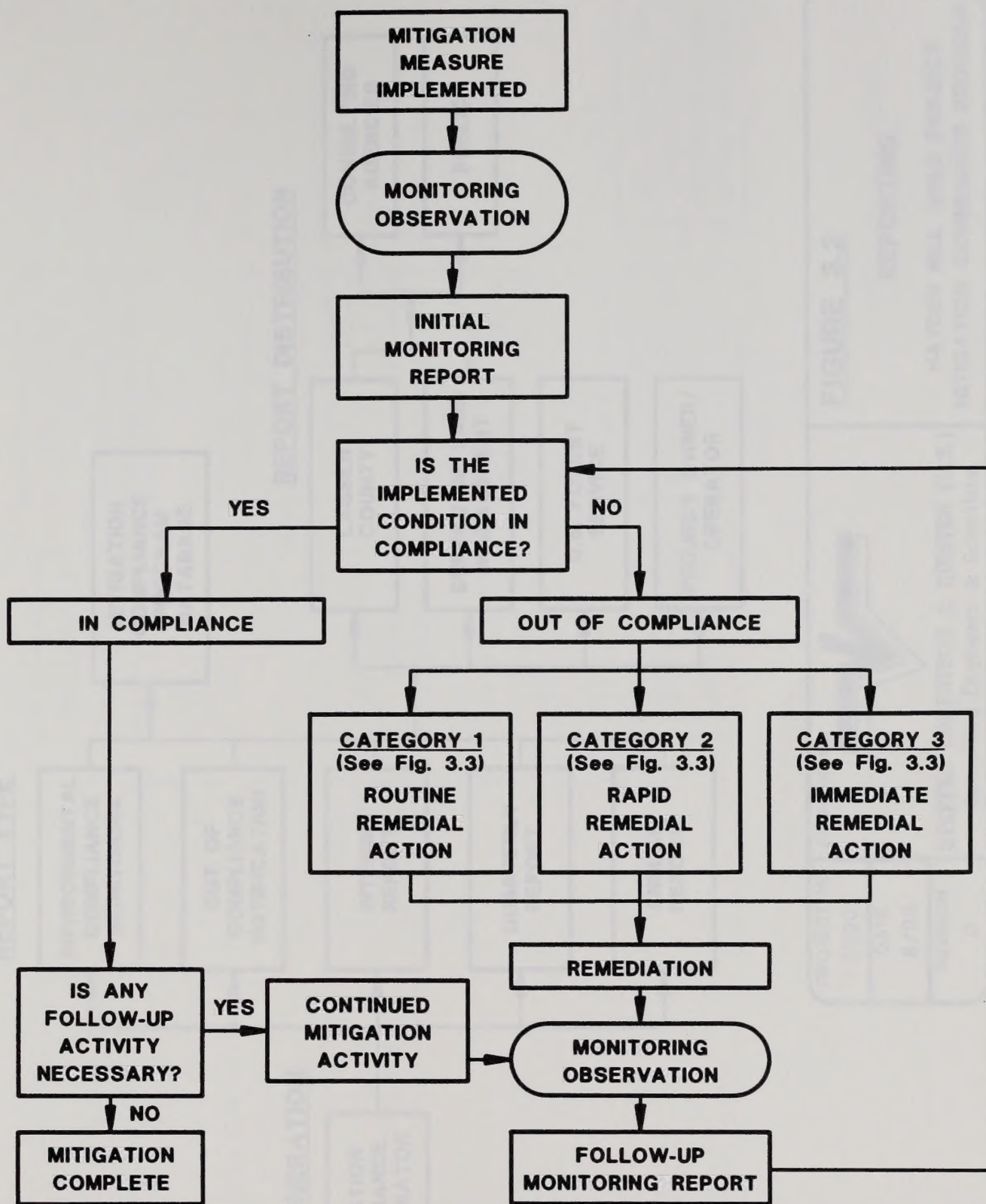
- Is the modification consistent with the environmental impact analysis completed for the Project; and
- is the modification consistent with the adopted conditions of approval?

In this manner, minor Project modifications could be readily incorporated into the MCP. This provision does not, however, permit Project modifications to be made without appropriate agency evaluation and approval.

4.0 ACRONYMS AND ABBREVIATIONS

The definitions provided below are for clarification of abbreviations and acronyms used in this document.

AB	Assembly Bill
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
County	Lassen County
CRC	Compliance Resolution Conference
CRWQCB	California Central Valley Regional Water Quality Control Board
ECM	Environmental Compliance Monitoring
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EM	Environmental Monitor
MCC	Mitigation Compliance Coordinator
MCP	Mitigation Compliance Program
NEPA	National Environmental Policy Act
OCN	Out of Compliance Notification
ROD	Record of Decision
RS	Resource Specialist
SMARA	California Surface Mining and Reclamation Act
USFS	United States Forest Service (Modoc)



PROJECT NO.

29001

DATE

8/90

REVISION

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PREPARED BY:

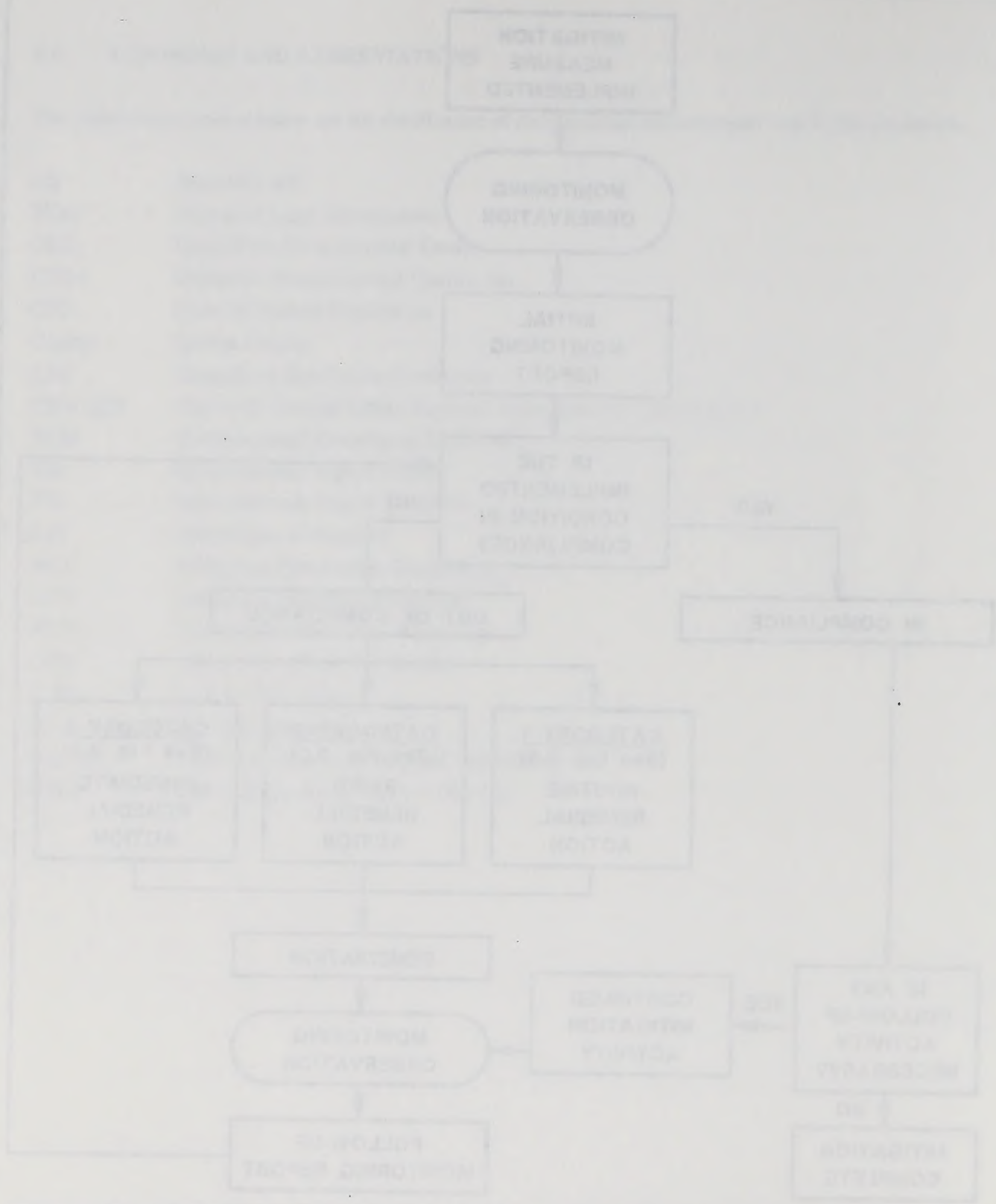


STEFFEN ROBERTSON & KIRSTEN (U.S.)
Consulting Engineers & Scientists

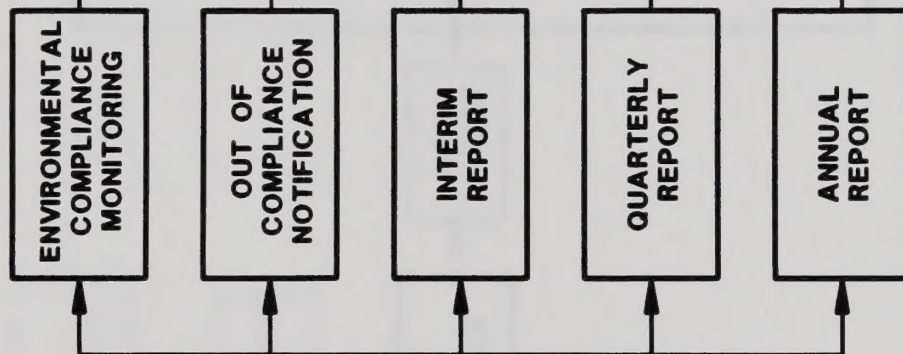
FIGURE 3.1

MONITORING

**HAYDEN HILL GOLD PROJECT
MITIGATION COMPLIANCE PROGRAM**



REPORT TYPE



REPORT GENERATION

MITIGATION
COMPLIANCE
COORDINATOR

PROJECT NO.
29001

DATE
8/90

REVISION
0

PREPARED BY:



STEFFEN ROBERTSON & KIRSTEN (U.S.)
Consulting Engineers & Scientists

FIGURE 3.2

REPORTING

HAYDEN HILL GOLD PROJECT
MITIGATION COMPLIANCE PROGRAM

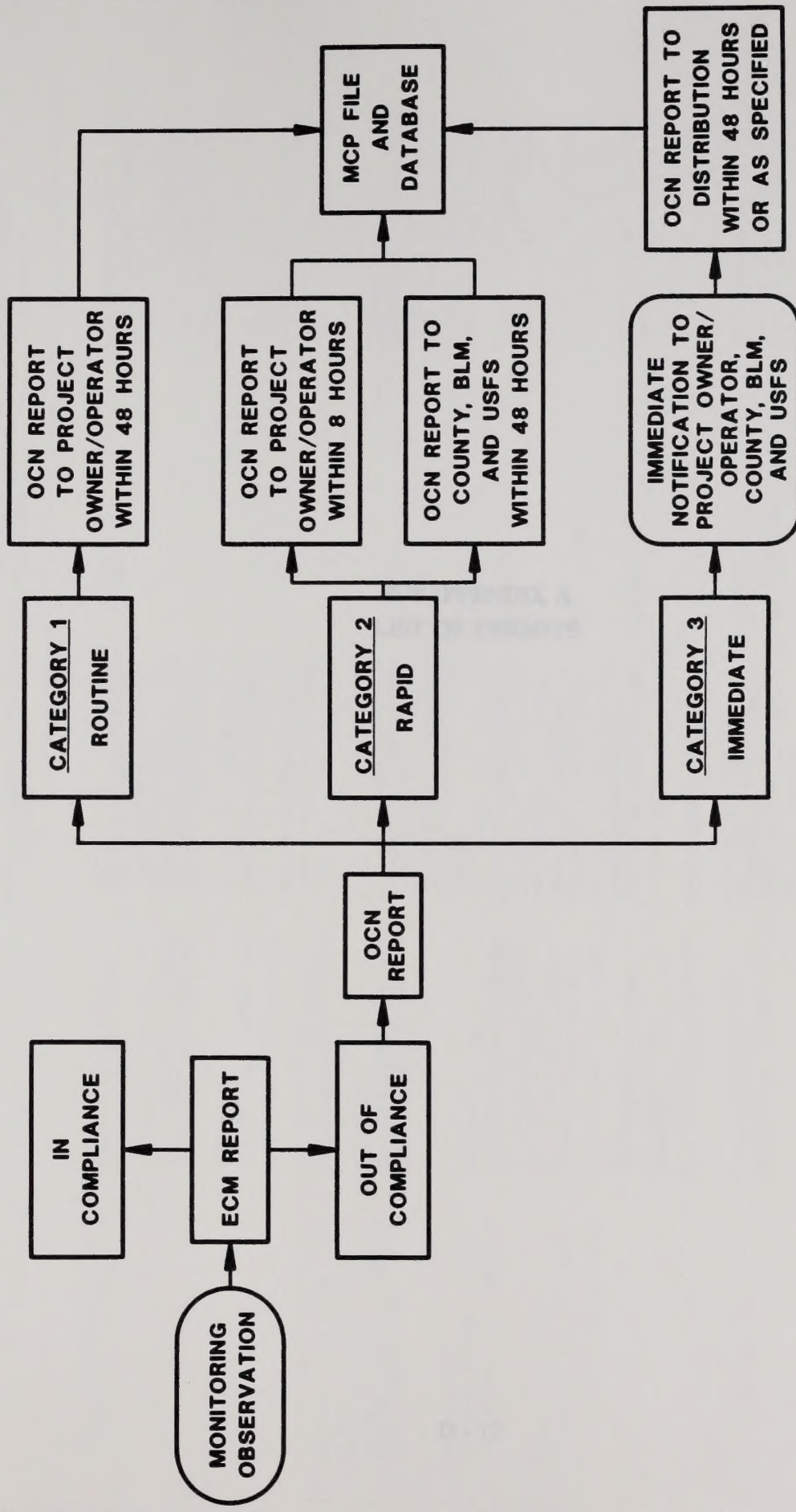


FIGURE 3.3

COMPLIANCE REPORT DISTRIBUTION

**HAYDEN HILL GOLD PROJECT
MITIGATION COMPLIANCE PROGRAM**

PREPARED BY:



STEFFEN ROBERTSON & KIRSTEN (U.S.)
Consulting Engineers & Scientists

PROJECT NO.	29001
DATE	8/90
REVISION	0

TABLE 1.6-1 SUMMARY OF PERMITS AND APPROVALS REQUIRED FOR THE HAYDEN HILL PROJECT*

Agency	Permit/Approval	Facet of Project	Time Requirement	Comments
FEDERAL				
Bureau of Land Management (BLM) and United States Forest Service (USFS)	Approval of Plan of Operation (Requires EA or EIS)**	All activities on unpatented mining claims on BLM land or involving right-of-way on BLM land. Road construction.	120 - 180 days	If an EIS is required, could take 365 days or longer. Public notice required.
	Right-of-Way Permit or Special Use Permit	Water and powerline corridors to site. Lookout pit construction	90 - 120 days	Date in Plan of Operations and EIS can be used for this application.
	Environmental Impact Statement	Environmental Compliance		
	Cultural Resource Permit	Authorizes Section 106 Field Investigation	30 days	Issued for fieldwork authorization
Department of the Army, Corps of Engineers	Dredge and Fill Permit (U.S. Army Corps of Engineers 404/Wetlands Permit)	Disturbance of or placement of fill material in wetlands.	60 - 90 days	If required will be an individual or Nationwide permit.
Department of Justice, Bureau of Alcohol, Tobacco, and Firearms	Purchase and Storage of Explosives Permit	Purchase of explosives in one state for use in another		
Department of Labor, Mine Safety, and Health Administration	Miner Training Plan (Title 30, Subchapter H, Part 48, Subpart B)			Training by certified instructors is mandatory for all personnel
	Emergency fire, evacuation and rescue plans	Separate plans required for surface and underground operations		
	Notice of Start of Operations	Notice must be filed prior to start of operations		
Advisory Council on Historic Preservation (ACHP)	Record of Inspection of Self Propelled Equipment (55.9-1)	Must be maintained for 6 months and available to inspectors		
	Section 106 Compliance	Approval of Site Treatment Plan	20 days	Issued after concurrence of SHPO

NOTE: This is not to be considered a complete list of all permits required.

* Not all of the permits listed may be required, depending upon the project design.

** These applications will trigger review by other agencies such as Dept. of Fish and Game and State Historic Preservation Office.

TABLE 1.8-1 (continued). PRELIMINARY SUMMARY OF PERMITS AND APPROVALS REQUIRED FOR THE HAYDEN HILL PROJECT

Agency	Permit/Approval	Facet of Project	Time Requirement	Comments
Fish and Wildlife Service	Section 7 Consultation	Review of Biological Assessment on Threatened or Endangered Species that may be impacted by the Proposed Action	90 days	A Draft Biological Opinion has been received (Appendix M). The BO states that the Project is not likely to jeopardize the existence of Modoc sucker.
STATE				
Cal-OSHA	Notification of Mine Opening			
California Chemical Emergency Planning and Response Commission	Notice of Emergency Hazardous Material			
Regional Water Quality Control Board	Waste Discharge Requirements	Tailings and heap leach facilities. Design, operational, cyanide neutralization and closure criteria.	120 days	Review of geotechnical design criteria to verify zero discharge operation. Bond(s) required. Public notice/hearing required.
Department of Fish and Game	National Pollution Discharge Elimination System (NPDES) Permit Streambed Alteration Permit 1603 CESA consultation Road kill removal	Any discharge of wastewater to surface water (i.e., sediment control facilities). Culvert installation crossing Willow Creek T+E species Access road haul roads.	120 days	Review of geotechnical design, will involve Public Notice; may be reviewed by federal EPA.
State Historical Preservation Office (SHPO)	Section 106 Compliance	National Register eligibility, Site Treatment Plans, Native American concerns	30 days +	Will be required
California Department of Forestry and Fire Protection	Relinquish Fire Tower	Pit excavation		

NOTE: This is not to be considered a complete list of all permits required.
 * Not all of the permits listed may be required, depending upon the project design.
 ** These applications will trigger review by other agencies such as Dept. of Fish and Game and State Historic Preservation Office.

TABLE 1.6-1 (continued). PRELIMINARY SUMMARY OF PERMITS AND APPROVALS REQUIRED FOR THE HAYDEN HILL PROJECT

Agency	Permit/Approval	Facet of Project	Time Requirement	Comments
COUNTY				
Lassen County Board of Supervisors	Hayden Hill Resource Plan	Policy framework for project consideration.	45 - 60 days	Plan EIR (Part of the Project EIR/EIS) must be certified and Resource Plan approved before Project can be considered. Reclamation plans will be carefully reviewed, as well as overall effect on the county and compatibility of project with existing land use plans.
	Conditional Use Permit (CUP)	All surface disturbance; land ownership zoning.	60 - 120 days	
	Environmental Impact Report	Environmental compliance	365 days +	EIR addresses CUP, reclamation plan and General Plan Amendment for the Hayden Hill Resource Plan.
	Surface Mining Operating Permit (Reclamation Permit)	All surface disturbances and proposed reclamation plan.	30 - 60 days	Requires a bond for disturbed acreage; permit must be reviewed annually.
	Building Plan Approval	Compliance with appropriate codes and standards		
	Building Permits	Fire safety, building safety, compliance with appropriate codes and standards		
	Approval of Mining/Reclamation Plan	Satisfaction of Surface Mining and Reclamation Act		
	Purchase and Use of Explosives	Proper storage and handling, possibly bonding		

NOTE: This is not to be considered a complete list of all permits required.

* Not all of the permits listed may be required, depending upon the project design.

** These applications will trigger review by other agencies such as Dept. of Fish and Game and State Historic Preservation Office.

TABLE 1.6-1 (continued). PRELIMINARY SUMMARY OF PERMITS AND APPROVALS REQUIRED FOR THE HAYDEN HILL PROJECT

Agency	Permit/Approval	Facet of Project	Time Requirement	Comments
Lassen County Air Pollution Control District	Authority to Construct (ATC)	Air Pollution Source Location and Control. All aspects that produce air contaminants including construction, mining, heap leaching, and burning combustible trash.	30 - 60 days	May require submission of plans and specs for air pollution control facilities.
	Permit to Operate	Air pollution operational and monitoring requirements, emissions limits established.	60 - 90 days	The Federal EPA may review all air quality permits.
Lassen County Department of Environmental Health	Air Tanks Emission (Inventory)	Once facility is in operation	1 day	
	Business Plan	Hazardous material	1 day	
	Acutely Hazardous Materials Registration Form	Cyanide		
	Sewage Disposal Permit	Sewage		

NOTE: This is not to be considered a complete list of all permits required.
 * Not all of the permits listed may be required, depending upon the project design.
 ** These applications will trigger review by other agencies such as Dept. of Fish and Game and State Historic Preservation Office.

**SUBAPPENDIX B
MITIGATION MEASURES
AND THE PROCEDURES FOR
COMPLIANCE MONITORING, REPORTING AND VERIFICATION**

This section contains the names of all mitigation measures which were identified in the EIS/IS and accepted by agencies as being a condition of approval in County, BLM, and MCF's permits for the Project. It also includes any additional mitigation requirements not identified in the EIS/IS but required of the Project Owner/Operator as a condition of approval by those agencies. These are subject to change, depending on the needs and requirements of Federal, State, and County officials, as well as the M.C.

One of the first functions of the M.C. will be to coordinate with the responsible agencies in the review and completion of an AICP specifications unique to the first construction, mitigation measure and conditions of approval for the Project. The revision of any requirement in the following program has not been noted from the requirements, and any other changes or revisions will not be required.

**SUBAPPENDIX B
MITIGATION MEASURES
AND THE PROCEDURES FOR
COMPLIANCE MONITORING, REPORTING AND VERIFICATION**

In this section, the M.C. will be responsible for the coordination and implementation of the mitigation measures and the procedures for compliance monitoring, reporting and verification. The BLM and MCF have provided for the implementation of mitigation measures and the procedures for compliance monitoring and tracking of compliance.

SUBAPPENDIX B
MITIGATION MEASURES
AND THE PROCEDURES FOR
COMPLIANCE MONITORING, REPORTING AND VERIFICATION

This section contains the record of all mitigation measures which were identified in the EIR/EIS and adopted by agencies or made a condition of approval in County, BLM, and USFS permits for the Project. It also includes any additional mitigation requirements not identified in the EIR/EIS but required of the Project Owner/Operator as conditions of approval by these agencies. These are subject to change, depending on the needs and requirements of Federal, State, and County officials, as well as the MCC.

One of the first functions of the MCC will be to coordinate with the responsible agencies in the update and completion of the MCP specifications subject to the final determinations, mitigation measures and conditions of approval for the Project. The omission of any requirement in the following program does not imply relief from the requirement, nor imply that detailed compliance monitoring specifications will not be imposed.

In this section the procedures for monitoring and reporting are described for each mitigation measure. Each mitigation measure is assigned a number so that monitoring and compliance may be easily tracked. The ECM and OCN forms provide for identification by mitigation measure number to facilitate recording and tracking of compliance.

INTRODUCTION

This MCP for the Lassen Gold Mining, Inc. (LGMI) Hayden Hill Project is to be used to monitor and report on mitigation measures adopted by agencies within approved plans or addressed by agencies in conditions of approval.

The Hayden Hill MCP has been prepared, and in its final form will be adopted, in accordance with Section 21081.6 of the Public Resources Code. This program provides the structure for implementing and monitoring compliance with requirements to mitigate significant impacts as identified in the EIR/EIS for the Hayden Hill Project. The authority to require the mitigation measures lies with the individual agencies for matters under their jurisdiction.

The compliance procedures for the MCP are described in Sections 2.0 and 3.0 of the MCP (Appendix D) and includes the following procedural elements:

- 1) **Mitigation Measure:** Identification of the required mitigation measure that has been incorporated into the approved plan or has been made a condition of approval by the authorizing agency. Some of the mitigation measures in themselves require the submittal of an application for an approval or a permit from an agency at a future date. In such cases the significant impact identified in the EIR/EIS which will be addressed in the agency review process are identified in the description of the mitigation measure. An example is the approvals required by the California Regional Water Quality Board (see Subappendix A).
- 2) **Compliance Monitoring:** The procedure for monitoring compliance with the mitigation measure is described. The procedure identifies who is to take the action, the action that is to be required, and when the action is to be initiated or completed.
- 3) **Reporting:** The reporting requirements regarding compliance with each mitigation measure is described in this element. It includes identifying the responsible individual and the method and frequency of reporting. The program requires completion of an ECM report for each measure and each inspection. The report will be submitted to the appropriate agency as required. In addition to the specific reporting requirements, the reports will be compiled in the annual report and submitted to the Lassen County Planning Department. In the event of non-compliance, the OCN will be completed and immediately submitted to the appropriate agencies.

- 4) **Verification and Data Recording:** The responsible agency and procedure for verifying compliance is described in this element. This element also specifies that the information is to be filed in the MCP data base managed by Lassen County or other data bases managed by other state or federal agencies.

The MCP is flexible. As the Project progresses, changes to compliance procedures may be necessary, or new ones developed based upon the experience and recommendations of the professionals and agencies involved in the Project subject to approval by the responsible agencies.

Organization of this Document

The mitigation measures identified in the EIR/EIS are presented in this document as they relate to the specific plans and approvals that govern the Hayden Hill Project. Those plans and approvals are as follows:

- I. General compliance obligations required by the Lassen County Planning Department.
- II. The Reclamation Plan approved in accordance with SMARA, 43 CFR 3809 and the Lassen County ordinances as administered by the Lassen County Planning Commission and BLM.
- III. The Waste Discharge requirements and the National Pollution Discharge Elimination System permit approved by the CRWQCB.
- IV. The Wildlife and Habitat Management Plan administered by the Project Owner/Operator in cooperation with the California Department of Fish and Game. The Biological Opinion administered by the Project Owner/Operator in cooperation with the U.S. Fish and Wildlife Service.
- V. The Section 404 Permit approved by the U.S. Army Corps of Engineers.
- VI. The Authority to Construct and the Permit to Operate approved by the Lassen County Air Pollution Control District.
- VII. Additional Plan of Operation requirements approved by the BLM and the USFS.

VIII. The Cultural Resources Mitigation and Resource Recovery Plan approved in accordance with Section 106 of the National Historic Preservation Act and Section 101 of NEPA as administered by the State Historic Preservation Office, the American Council on Historic Preservation, the BLM, and the USFS.

IX. County permits issued in accordance with the ordinances of Lassen County as administered by the Department of Public Works, th/e Building Inspector and the Planning Department.

HAYDEN HILL PROJECT MITIGATION COMPLIANCE PROGRAM

Section I. General Obligations

Compliance Item No. 1.0

1.1 Mitigation Measure

LGMI shall comply with the provisions of the MCP which has been adopted pursuant to State Assembly Bill 3180, and as it is adopted as part of the Plan of Operations by the Bureau of Land Management and the U.S. Forest Service.

1.2 Compliance Monitoring

The MCC will review the MCP annually to evaluate the performance of the Project Owner/ Operator in regard to implementation of the mitigation measures, adherence to schedules, reporting, inspections and related MCP activity.

1.3 Reporting

The MCC shall report his findings and make recommendations in the annual report submitted to the Lassen County Planning Official and the BLM, the Lead Agencies.

1.5 Verification and Data Recording

The Lassen County Planning Official and the Bureau of Land Management shall verify compliance through review of the records and the findings and recommendations. The Lassen County Planning Official and the Bureau of Land Management shall initiate changes to the MCP as appropriate. Changes and information will be recorded in the MCP data base, as appropriate.

Compliance Item No. 2.0

2.1 Mitigation Measure

For an emergency out of compliance condition, remedial action shall not be delayed by dispute resolution proceedings.

2.2 Compliance Monitoring

Lassen Gold Mining, Inc., through the MCC, will take immediate remedial action in the event of an emergency out of compliance condition. The MCC will notify the Lassen County Planning Official and appropriate agencies immediately of the emergency out of compliance condition and the planned remediation. The appropriate land management agency shall identify the appropriate remediation with respect to the lands they administer.

2.3 Reporting

The MCC will complete an OCN and immediately submit it to the Lassen County Planning Official and the appropriate Federal agency. Written notification that the remediation has been completed will be submitted to the Planning Department not later than one week after the out of compliance condition has been remediated. The MCC will also submit the OCN with the annual report.

2.4 Verification and Data Recording

The Lassen County Planning Official and other appropriate state or federal official shall inspect the out of compliance condition and verify that appropriate remedial action is being implemented.

All information relating to the out of compliance condition will be filed in the Lassen County MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

**Section II. Reclamation Plan Permit and Approval
Lassen County Planning Commission**

Compliance Item No. 3.0

3.1 Mitigation Measure

- A. LGMI will perform activities to minimize wind and water erosion, control sedimentation and maximize the availability, storage and productivity of plant growth media as stated in the Reclamation Plan.
- B. LGMI will inspect and maintain erosion and sediment control structures as necessary to ensure performance as designed.
- C. LGMI will re-vegetate disturbed areas as described in the Reclamation Plan.
- D. LGMI will conduct field trials, as required in the Reclamation Plan, to ascertain methods best suited for establishment of appropriate vegetation.

3.2 Compliance Monitoring

- A. The MCC will conduct regular monitoring inspections to determine if the prescribed measures for control of erosion and sedimentation, soil management and re-vegetation are being implemented.
- B. The MCC will regularly monitor the progress of the field trials.

3.3 Reporting

- A. The MCC will submit an ECM report to the Lassen County Planning Official, BLM and USFS after each monitoring inspection.

- B. A report addressing the field trials will be submitted quarterly to the Lassen County Planning Official.
- C. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the Lassen County Planning Official.
- D. The annual report submitted by the MCC to the Lassen County Planning Official will specifically address compliance with the requirements to control erosion and sedimentation; the requirements to salvage and properly store soils and plant growth media; the requirements for re-vegetation; and the progress of the field trials. The annual report will be submitted on January 30th of each year.

3.4 Verification and Data Recording

- A. Not less than once annually the Lassen County Planning Official will conduct a field inspection of the mine site to verify the status of compliance with the erosion and sedimentation control, soil management and re-vegetation mitigation measures. The inspection will include a review of the accuracy of the compliance records submitted by the MCC as they relate to the activity subject to these mitigation measures. A verification inspection report will be completed following the field inspection.
- B. Upon receipt of the ECM reports, quarterly reports, annual reports and the verification inspection reports, the Lassen County Planning Official shall ensure that the information is properly filed in the MCP data base.

Compliance Item No. 4.0

4.1 Mitigation Measure

- A. Lassen Gold Mining, Inc. shall properly dispose of biomass material. If necessary, Lassen Gold Mining, Inc. will acquire the appropriate permits for disposal.

4.2 Compliance Monitoring

- A. The MCC shall monitor the biomass disposal operations on a regular basis to determine whether LGMI is complying with the approved plan.

4.3 Reporting

- A. The MCC shall complete an ECM report after the monitoring inspection and submit it with the annual report.
- B. If there is non-compliance, the MCC shall immediately inform the Lassen County Planning Official and submit an OCN to the Official.

4.4 Verification and Data Recording

- A. The Lassen County Planning Official shall verify that the plan has been completed and demonstrates that LGMI can operate in compliance with applicable Lassen County ordinances.
- B. The Lassen County Planning Official will ensure that the ECM report, verification inspection report and annual report is filed in the MCP data base.

Compliance Item No. 5.0

5.1 Mitigation Measure

- A. Groundwater will be monitored for water levels on a quarterly basis and the data recorded and kept on file at the mine site. If analysis of the data finds that actual drawdown exceeds the current estimate, the well field modeling will be re-evaluated.

5.2 Compliance Procedure

- A. The MCC will monitor the collection and interpretation of data and conduct monitoring inspections as necessary to ensure wells are properly maintained. If the actual drawdown exceeds current estimates, the MCC will monitor the re-evaluation of the well field modeling and any modifications to the mining and Reclamation Plan that are necessary to reduce drawdown.

5.3 Reporting

- A.** The MCC will complete an ECM report after monitoring inspections and submit it with the quarterly report on the results of analysis of the data. The reports will be submitted to the Lassen County Planning Official and included in the annual report.
- B.** In the event of non-compliance, the MCC shall immediately notify the Lassen County Planning Official and submit an OCN to the Official.

5.4 Verification and Compliance Date Recording

- A.** Not less than once annually the Lassen County Planning Officer will conduct a field inspection of the mine site to verify the status of compliance with the ground water monitoring program. The inspection will include a review of the accuracy of the reports and records managed by the MCC as they relate to the activity subject to the mitigation measures.
- B.** Upon receipt of the ECM reports, quarterly reports, annual reports, any OCN and the verification inspection report, the Lassen County Planning Official shall ensure that the information is properly filed in the MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

**Section III. Waste Discharge Requirements and NPDES Permits
California Central Valley Regional Water Quality Control Board (CRWQCB)**

Compliance Item No. 6

6.1 Mitigation Measure

A. Prior to placing ore on the leach pads, disposing of acid forming rock or discharging water, LGMI will apply to the CRWQCB for Waste Discharge requirements and NPDES permits. Lassen Gold Mining, Inc. shall obtain permits and approvals from and comply with the CRWQCB requirements concerning the use of materials and procedures for safely containing liquids and the discharge of water, including:

- 1) use of impermeable synthetic liners for solution basins, heap leach pads, and solution transport ditches;
- 2) use of solution transport pipes;
- 3) employment of leak detection systems;
- 4) monitoring surface and groundwater quality;
- 5) detoxifying heaps and waste piles;
- 6) isolating and encapsulating acid producing waste rock;
- 7) dewatering and treating ponded pit water that is degraded in quality;
- 8) discharging waters from sedimentation ponds and structures; and
- 9) other measures as identified in the Geochemical Sampling and Contingency Plan.

Prior to construction of waste facilities or structures that will discharge water, the MCC will notify the Lassen County Planning Official and the BLM.

6.2 Compliance Monitoring

- A. The MCC will inspect records and the facilities to determine if the proper permits have been obtained. Upon receipt of the permit, the MCC will forward copies to the Lassen County Planning Official.

6.3 Reporting

- A. The MCC shall include information regarding receipt of permits for facilities and structures in the annual report submitted to the Lassen County Planning Official.
- B. In the event of non-compliance, the MCC shall immediately notify the Lassen County Planning Official and submit an OCN to the Official.

6.4 Verification and Data Reporting

- A. The Lassen County Planning Official shall verify that the permits have been received and coordinate with the CRWQCB regarding compliance. The Lassen County Planning Official shall ensure that the reports and permits are filed in the MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

- Section IV. (a) The Wildlife and Habitat Management Plan**
Lassen County Planning Commission and the California Department of Fish and Game
- (b) The Migratory Bird Treaty Act and the Biological Opinion Issued Pursuant to the Federal Endangered Species Act**
United States Fish and Wildlife Service

Compliance Item No. 7.0

7.1 Mitigation Measure

- A. LGMI will comply with the terms of the Wildlife and Habitat Management Plan and its appendices, the conditions of the Migratory Bird Treaty Act, and the terms and conditions of the Biological Opinion which include:**

- 1) enhancing adjacent area habitat for wildlife and livestock;**
- 2) enhancing the sage grouse habitat;**
- 3) luring young grouse to new lek sites;**
- 4) fencing ponds containing cyanide solution;**
- 5) netting ponds containing solution in excess of 10 ppm cyanide and, when netting fails, preventing wildlife access through the use of hazing techniques;**
- 6) encouraging van pools to reduce employee traffic on roads to reduce road kill potential;**
- 7) obtaining a Section 1603, streambed alteration permit from the Department of Fish and Game for the Willow Creek crossing; and**

- 8) creating a seasonally inundated wetland for mitigation of lost wetlands.

7.2 Compliance Monitoring

- A. The MCC will regularly review the Wildlife and Habitat Mitigation Plan and conduct monitoring inspections to determine whether LGMI is in compliance with the requirements. The inspections will include examination of berms, culverts and drainage channels to retention ponds. Lassen Gold Mining, Inc. shall maintain the control structure in proper condition so that any toxic materials that slowly accumulate on parking and other work areas do not wash into Willow Creek or any of its sub drainages.
- B. The MCC will conduct daily inspections of structures and facilities and record mortalities.

7.3 Reporting

- A. The MCC will complete an ECM report at the conclusion of each monitoring inspection. The ECM report will be submitted to the Lassen County Planning Official, the California Department of Fish and Game, and the BLM. The ECM reports will also be included in the annual report.
- B. In the event of non-compliance with the agreement, the MCC will immediately notify the Lassen County Planning Official, the Department of Fish and Game and the BLM and submit an OCN to those agencies.
- C. The United States Fish and Wildlife Service is to be notified within three (3) working days of the finding of any Modoc suckers found dead or injured in the Hayden Hill Project area. The contact person is Mr. Wayne While, Field Supervisor in the Sacramento USFS office. Any specimens will be turned into the California Department of Fish and Game. The CDFG contact is Ms. Carla Markman (916) 355-7114.
- D. The MCC will report deaths of migratory birds to CDFG, BLM, and USFWS by phone within three working days of the take. The report will be followed up by an ECM report within five working days to those agencies and the Lassen County Planning Official. The MCC will submit a monthly mortality report to BLM.

7.4 Verification and Data Recording

- A. The Lassen County Planning Official shall coordinate with the California Department of Fish and Game to evaluate compliance with the Wildlife and Habitat Mitigation Plan. The agencies shall coordinate with respect to verifying compliance with the agreement, including on-site inspections and review of records.
- B. The Lassen County Planning Official shall ensure that the ECM reports and any OCN are filed in the MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

**Section V. Wetlands Mitigation and the 404 Permit
Army Corps of Engineers**

Compliance Item No. 8.0

8.1 Mitigation Measure

- A. No disturbance to wetlands shall occur until a 404 permit has been received from the Army Corps of Engineers. LGMI shall comply with the terms and requirements of the permit. The wetlands mitigation measures included in the Wildlife and Habitat Mitigation Plan shall be implemented.

8.2 Compliance Monitoring

- A. The MCC will conduct monitoring inspections of designated constructed wetlands and determine whether LGMI is in compliance with the terms of the 404 permit.

8.3 Reporting

- A. The MCC will complete an ECM report at the conclusion of each monitoring inspection and submit the record to the Lassen County Planning Official, the Army Corps of Engineers, the California Department of Fish and Game, and the BLM. The ECM report shall be included in the annual report.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official, the Army Corps of Engineers, the California Department of Fish and Game, and the BLM. An OCN shall be completed and submitted to the agencies.

8.4 Verification and Data Recording

- A. The Lassen County Planning Official shall coordinate with the Army Corps of Engineers, the California Department of Fish and Game, and the BLM to conduct verification inspections. The Lassen County Planning Official shall file the ECM reports and any OCN in the MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

**Section VI. Authority to Construct and Permit to Operate
The Lassen County Air Pollution Control District**

Compliance Item No. 9.0

9.1 Mitigation Measure

A. LGMI will control fugitive dust and other emissions in accordance with the permits and requirements administered by the Lassen County Air Pollution Control District, including emissions from:

- 1) mining, drilling and hauling;
- 2) travel on access roads;
- 3) ore crushing;
- 4) the loading of lime in the silo;
- 5) refining (doré furnace dust and mercury emissions); and
- 6) the leaching process (hydrogen cyanide emissions).

9.2 Compliance Monitoring

A. The MCC will conduct monitoring inspections to determine compliance with dust suppression requirements, operations and maintenance of emission control equipment on crushing, loading and refining facilities and maintenance of leach solution at pH of greater than 10.5. Inspections will be conducted routinely as required by the Lassen County Air Pollution Control District.

9.3 Reporting

- A. The MCC will complete an ECM report for each facility at the end of each inspection. The ECM report will be submitted in the annual report.**
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and the Lassen County Air Pollution Control District and submit an OCN to the agencies.**

9.4 Verification and Data Recording

- A. The Lassen County Planning Official shall coordinate with the Lassen County Air Pollution Control District to conduct verification inspections. The Lassen County Planning Official shall ensure that the ECM reports, any OCN and the annual report are filed in the MCP data base.**

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

Section VII. Additional Plan of Operation Requirements

The Bureau of Land Management (BLM) and the U.S. Forest Service (USFS)

Compliance Item No. 10.0

10.1 Mitigation Measure

- A. LGMI will construct a new fire tower on Snag Hill. LGMI will reclaim all disturbances at Snag Hill in accordance with the Plan of Operation approved by the USFS.

10.2 Compliance Monitoring

- A. The MCC will conduct quarterly monitoring inspections of Snag Hill to determine if reclamation is progressing in accordance with the Plan of Operation.

10.3 Reporting

- A. The MCC will complete an ECM report at the conclusion of each inspection. The report will be submitted to the USFS after each inspection and included in the annual report submitted to the Lassen County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and the USFS and submit an OCN to the agencies.

10.4 Verification and Data Recording

- A.** The Lassen County Planning Official shall coordinate with the USFS to conduct verification inspections. The Lassen County Planning Official shall ensure that the ECM report, any OCN and annual report are filed in the MCP data base.

Compliance Item No. 11.0

11.1 Mitigation Measure

- A.** As specified in the Plan of Operations, LGMI shall identify, inventory, and schedule sale and removal of timber prior to mine development.

11.2 Compliance Monitoring

- A.** The MCC will conduct a review of the Plan of Operations and inspect as necessary to determine if timber is being sold and removed according to the plan.

11.3 Reporting

- A.** The MCC will complete an ECM report at the conclusion of each inspection. The report will be submitted to the BLM and USFS and included in the annual report submitted to the Lassen County Planning Official.
- B.** If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and the USFS and submit an OCN to the agencies.

11.4 Verification and Data Recording

- A.** The Lassen County Planning Official shall coordinate with the USFS to conduct verification inspections. The Lassen County Planning Official shall ensure that the ECM report, any OCN and the annual report are filed in the MCP data base.

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

Section VIII. Cultural Resources Mitigation and Resource Recovery Plan

**State Historic Preservation Office, the American Council on Historic Preservation,
the Bureau of Land Management and the U.S. Forest Service**

Compliance Item No. 12

12.1 Mitigation Measure

- A. Prior to commencement of the Project construction, a study of the residential core of the Hayden Hill townsite will be completed and the fire tower will undergo Historic American Building Survey recordation. The fire tower will be relocated to another site in accordance with the Cultural Resources Mitigation and Resource Recovery Plan.

12.2 Compliance Monitoring

- A. The MCC will conduct a review to ensure that the study and recordation have been completed according to the plan. Monitoring inspections will be conducted as necessary.

12.3 Reporting

- A. The MCC will complete an ECM report at the conclusion of the review and/or inspections. The ECM report will be submitted to the State Historic Preservation Officer, the BLM and the Lassen County Planning Official and included in the annual report submitted to the Lassen County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official, the State Historic Preservation Officer, the American Council on Historic Preservation and the BLM and submit an OCN to the agencies.

12.4 Verification and Data Recording

- A. The Lassen County Planning Official shall coordinate with the State Historic Preservation Officer and the BLM to verify compliance. The Lassen County Planning Official shall ensure that the ECM reports, any OCN and the annual reports are filed in the MCP data base.

Compliance Item No. 13

13.1 Mitigation Measure

- A. LGMI will comply with the requirements of the Cultural Resources Mitigation and Resource Recovery Plan, including:
 - 1) Determination of eligibility of sites that cannot be avoided by operations and development of appropriate mitigation measures of eligible sites;
 - 2) cessation of all activity affecting any grave sites that are encountered until evaluated by the proper authorities;
 - 3) ensuring that the fence around the cemetery is not damaged by LGMI operations; and
 - 4) issuing the statement to all employees, contractors and consultants informing them of the seriousness of the offense of disturbing sites of historical and archaeological significance.

13.2 Compliance Monitoring

- A. The MCC will review annually the Cultural Resources Mitigation and Resource Recovery Plan to determine if LGMI is in compliance with the terms and requirements and conduct monitoring inspections as necessary.

13.3 Reporting

- A. The MCC will complete an ECM at the conclusion of the review and/or inspections. The ECM report will be submitted to the State Historic Preservation Officer, the BLM and the Lassen County Planning Official and included in the annual report submitted to the Lassen County Planning Official.**
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official, the State Historic Preservation Officer, and the BLM and submit an OCN to the agencies.**

13.4 Verification and Data Recording

- A. The Lassen County Planning Official shall coordinate with the State Historic Preservation Officer and the BLM to verify compliance. The Lassen County Planning Official shall ensure that the ECM reports, any OCN and the annual reports are filed in the MCP data base.**

**HAYDEN HILL PROJECT
MITIGATION COMPLIANCE PROGRAM**

Section IX. County Permits and Approvals (does not include the Reclamation Plan Permit and Approval, see Section II.)

Compliance Item No. 14

14.1 Mitigation Measure - Drainages

- A. Prior to rerouting of drainages and seeps, LGMI shall submit a drainage plan to the County Planning Department and obtain the appropriate approval.

14.2 Compliance Monitoring

- A. The MCC will monitor the Project to determine if the appropriate approvals have been obtained for alteration of drainages.

14.3 Reporting

- A. The MCC will address the status of compliance with this mitigation measure in the annual report.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the Official.

14.4 Verification and Data Recording

- A. The Lassen County Planning Official shall review the annual report, any OCN and the County records to verify compliance.
- B. The Lassen County Planning Official will file the annual report and any OCN in the MCP data base.

Compliance Item No. 15

15.1 Mitigation Measure - Power Line

- A. LGMI shall obtain ownership of the power line from County Road A2 south to the Project site and shall remove the line as part of reclamation and closure unless the county adopts a policy that provides for the line to remain after mining.

15.2 Compliance Monitoring

- A. The MCC will review the status of the power line regarding County determination of long term use. At the time of closure the MCC will determine if the operators closure decision is in compliance with County planning requirements.

15.3 Reporting

- A. The MCC will complete an ECM report regarding the compliance determination at time of closure. The ECM report will be submitted to the Lassen County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the Official.

15.4 Verification and Data Recording

- A. The Lassen County Planning Official shall review the ECM report and County records to verify compliance.
- B. The Lassen County Planning Official will file the ECM report and any OCN in the MCP data base.

Compliance Item No. 16.0

16.1 Mitigation Measure - Visual Impacts

- A. To mitigate visual impacts LGMI will do the following:

- 1) Colors and materials of all structures will be selected to reduce visual impacts and be harmonious with natural surroundings;
- 2) color selection will be subject to the approval of the county planning office; and
- 3) poles for the power line will be hidden in the trees at the crossing of Highway 139 near the Hayden Hill intersection.

16.2 Compliance Monitoring

- A. The MCC will monitor the painting and installation of materials and structures to determine compliance with the county approval.

16.3 Reporting

- A. The MCC will complete an ECM report after installation of materials and structures and submit the report to the Lassen County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the Official.

16.4 Verification and Data Recording

- A. The Lassen County Planning Official shall inspect the site and the ECM reports to verify compliance.
- B. The Lassen County Planning Official will file the ECM report and any OCN in the MCP data base.

Compliance Item No. 17.0

17.1 Mitigation Measure - Transportation

- A. LGMI shall obtain the appropriate permits from the County Public Works Department for trucks which qualify as overload or overwide.

17.2 Compliance Monitoring

- A. The MCC will periodically monitor truck traffic to determine if LGMI is in compliance with county requirements regarding overload and overwide vehicle.

17.3 Reporting

- A. The MCC will complete an ECM report after conducting a review of permits or monitoring inspection and submit the report to the County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the Official.

17.4 Verification and Data Recording

- A. The Lassen County Planning Official shall review the ECM report to verify compliance.
- B. The Lassen County Planning Official will file the ECM report and any OCN in the MCP data base.

Compliance Item No. 18

18.1 Mitigation Measure - Hazardous Materials Transport

- A. To assure preparedness for hazardous material spills LGMI shall do the following:
 - 1) Work with Lassen County on an emergency response plan;
 - 2) provide hazardous materials spill training for appropriate agencies; and
 - 3) determine the appropriate number of emergency response personnel necessary to ensure effective response to an incident.

18.2 Compliance Monitoring

- A.** The MCC will annually monitor to determine the level of training in hazardous materials response of designated company personnel and the number of such personnel.

18.3 Reporting

- A.** The MCC will complete an ECM report and submit the report as part of the annual report to the Lassen County Planning Official.
- B.** If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the official.

18.4 Verification and Data Recording

- A.** The Lassen County Planning Official shall review the ECM report to verify compliance.
- B.** The Lassen County Planning Official will file the ECM report and any OCN in the MCP data base.

Compliance Item No. 19.0

19.1 Mitigation Measure - Recreation

- A.** To provide recreational and educational opportunities, LGMI will:
 - 1)** Provide escorted access to the cemetery through the mine site for the public; and
 - 2)** in accordance with a schedule agreed upon with Lassen County, develop an observation turnout near the mine and provide signs describing historic and current mining information.

19.2 Compliance Monitoring

- A. The MCC will monitor to determine if escorted access to the cemetery is being provided and if the turnout is constructed as scheduled.

19.3 Reporting

- A. The MCC will complete an ECM report and submit the report as part of the annual report to the Lassen County Planning Official.
- B. If a non-compliance condition is identified, the MCC will immediately notify the Lassen County Planning Official and submit an OCN to the official.

19.4 Verification and Data Recording

- A. The Lassen County Planning Officer shall review the ECM report to verify compliance.
- B. The Lassen County Planning Officer will file the ECM report, any OCN and the annual report in the MCP data base.

Compliance Item No. 20.0

20.1 Mitigation Measure - Noise

- A. LGMI will control noise from blasting within the decibel limitations set forth in the Hayden Hill Resource Plan.

20.2 Compliance Monitoring

- A. The MCC will periodically monitor noise from blasting to determine if it is within established standards.

20.3 Reporting

- A. The MCC will complete an ECM report and submit the report as part of the annual report to the Lassen County Planning Official.

A. The Lassen County Planning Official shall review the ECM report to verify compliance.

B. The Lassen County Planning Official will file the ECM report and any OCN in the MCP data base.

SUBAPPENDIX C
COMPLIANCE MONITORING FORMS

ENVIRONMENTAL COMPLIANCE MONITORING REPORT (ECM)



STEFFEN ROBERTSON & KIRSTEN (U.S.)

REPORT NO. _____

REFERENCE DATA

DATE _____

TIME _____

LOCATION _____

ACTIVITY _____

MONITORED PARAMETER,
FEATURE OR ITEM: _____

MCP MITIGATION
MEASURE NUMBER: _____

COMPLIANCE STATUS

☐ ACCEPTABLE

☐ UNACCEPTABLE

(If unacceptable,
complete the
Out of Compliance
Notification)

☐ Followup Report →

☐ Remedial Action
Implemented

☐ Additional Follow-Up
Required

COMPLIANCE MONITORING ☐

PREVIOUS REPORT NO. _____

DATE _____

COMMENTS _____

OCN NO. _____

OBSERVATIONS: _____

RECOMMENDATIONS: _____

OBSERVER

PRINT NAME _____

SIGNATURE _____

MITIGATION COMPLIANCE COORDINATOR

PRINT NAME _____

SIGNATURE _____

PROJECT OWNER/OPERATOR

PRINT NAME _____

SIGNATURE _____

RECEIPT ACKNOWLEDGED---LASSEN COUNTY PLANNING OFFICIAL

PRINT NAME _____

SIGNATURE _____

DATE _____

TIME _____

COMMENTS/ACTION: _____

OUT OF COMPLIANCE NOTIFICATION (OCN)



STEFFEN ROBERTSON & KIRSTEN (U.S.)

REPORT NO.

REFERENCE DATA

DATE

TIME

LOCATION

ACTIVITY

MONITORED PARAMETER,
FEATURE OR ITEM:

MCP MITIGATION
MEASURE NUMBER:

ECM REPORT NO.

NON-COMPLIANCE PRIORITY
(Category 1, 2 or 3)

☐ Immediate (3)

☐ Rapid (2)

☐ Routine (1)

☐ Remedial Action
Implemented

☐ Additional Follow-Up
Required

COMMENTS

OBSERVATIONS:

RECOMMENDATIONS:

OBSERVER

PRINT NAME

SIGNATURE

MITIGATION COMPLIANCE COORDINATOR

PRINT NAME

SIGNATURE

PROJECT OWNER/OPERATOR

PRINT NAME

SIGNATURE

RECEIPT ACKNOWLEDGED---LASSEN COUNTY PLANNING OFFICIAL

PRINT NAME

SIGNATURE

DATE

TIME

COMMENTS/ACTION:

6. Central Valley Regional Water Quality Control Board
Central Valley Regional Water Quality Control Board
1111 North Zeeb Road, Suite 100
Fresno, CA 93721
Tel: (559) 434-1111
7. California Department of Fish and Game
Department of Fish and Game
1515 Clay Street
Sacramento, CA 95811
Tel: (916) 227-1515
8. U.S. Army Corps of Engineers
U.S. Army Corps of Engineers
2215 River Street
Sacramento, CA 95811
Tel: (916) 227-2215
9. Lassen County Planning Office
Lassen County Planning Office
1000 Main Street
Susanville, CA 96150
Tel: (530) 235-1000

SUBAPPENDIX D MITIGATION COMPLIANCE CONTACTS

1. Lassen County Air Pollution Control District
Lassen County Air Pollution Control District
1775 Main Street
Susanville, CA 96150
Tel: (530) 235-1775
2. Bureau of Land Management
Bureau of Land Management
1515 Clay Street
Sacramento, CA 95811
Tel: (916) 227-1515
3. United States Forest Service
United States Forest Service
1515 Clay Street
Sacramento, CA 95811
Tel: (916) 227-1515
4. United States Fish and Wildlife Service
United States Fish and Wildlife Service
1515 Clay Street
Sacramento, CA 95811
Tel: (916) 227-1515
5. United States Environmental Protection Agency
United States Environmental Protection Agency
1515 Clay Street
Sacramento, CA 95811
Tel: (916) 227-1515

HAYDEN HILL MCP CONTACT LIST

- | | |
|---|--|
| 1. Project Owner/Operator | General Manager
Lassen Gold Mining, Inc.
P.O. Box 1028
55 South Lassen Street
Susanville, CA 96130
(916) 257-2411 |
| 2. Mitigation Compliance Coordinator | Chief of Environmental Services
Lassen Gold Mining, Inc.
P.O. Box 1028
55 South Lassen Street
Susanville, CA 96130
(916) 257-2411 |
| 3. Lassen County Planning Official | Planning Director
Lassen County
707 Nevada Street
Susanville, CA 96130
(916) 257-8311 |
| 4. Bureau of Land Management | Alturas Area Manager
608 W. 12th Street
Alturas, CA 96101
(916) 233-4666 |
| 5. United States Forest Service | District Ranger
Big Valley Ranger District
United States Forest Service
P.O. Box 159
Adin, CA 96006
(916) 299-3215 |

**6. Central Valley Regional Water
Quality Control Board**

Chief of Regulatory Unit
Central Valley Regional Water Quality
Control Board
415 Knollcrest Drive, Suite 100
Redding, CA 96002
(916) 224-4845

**7. California Department of Fish
and Game**

Area Wildlife Biologist
California Department of Fish and Game
Wendel Refuge
Wendel, CA 96130
(916) 254-8808

8. U.S. Army Corps of Engineers

Chief of Regulatory Unit 2
Regulatory Section
U.S. Army Corps of Engineers
1325 J Street
Sacramento, CA 95814-2922
(916) 557-5254

**9. Lassen County Air Pollution Control
District**

Air Pollution Control Officer
Lassen County Air Pollution Control District
175 Russell Avenue
Susanville, CA 96130
(916) 257-8311

10. State Historic Preservation Officer

State Historic Preservation Officer
Office of Historic Preservation
Department of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001
(916) 455-8006

**11. United States Fish and
Wildlife Service**

Field Supervisor
Room E-1203
2900 Cottage Way
Sacramento, CA 95825
(916) 978-4613
FTS 460-4613

APPENDIX E

Reclamation Plan

Note:

This is an abbreviated version of the Reclamation Plan on file at the County. As such, supplemental information for this appendix is found in Chapters 2.0 and 3.0 of the EIR/EIS. Please refer to Chapter 2.0 in the EIR/EIS for Appendix B and Chapter 3.0 in the EIR/EIS for Appendix A when they are referenced in this Reclamation Plan.

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Prepared for:

Lassen Gold Mining, Inc.

Post Office Box 1028

Susanville, California 96130

4.4.1 Waste Placement

4.4.2 Covering/Sealing

4.4.3 Surface Disturbance Requirements

Prepared by:

Steffen Robertson and Kirsten (U.S.), Inc.

3232 South Vance Street

Lakewood, Colorado 80227

4.4.4 Specific Studies and Mitigation Measures

September 1991

SRK Project No. 29001.10

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1.0 INTRODUCTION

This Reclamation Plan has evolved with the EIR/EIS process in response to agency and public comment. Therefore, the Reclamation Plan contains the environmentally preferred alternatives identified in the Draft EIR/EIS and from public comment following the release of the Draft. Specifically, this plan includes the complete benching alternative for the waste rock dump and the power supply alternative identified in the EIR/EIS. LGMI anticipates building the Project with the inclusion of these alternatives and has included them in this plan. It should be noted that the Complete Benching Alternative requires 20 additional acres of disturbance. For this reason disturbance acreages in this Plan do not match with the Project EIR/EIS.

The Hayden Hill Project (Project) is owned and operated by Lassen Gold Mining, Inc. (LGMI), a subsidiary of Amax Gold, Inc. The Project consists of an open pit mine and associated ore processing facilities located in northern Lassen County, California. Briefly, the Project includes a mine, waste rock dump, mill/tailings pond system, heap leach system, precious metals recovery processing plant, and ancillary facilities.

1.1 Project Location

The Project is located in Lassen County, approximately 120 air miles north northwest of Reno, Nevada and 15 air miles south of Adin, California (Figure 1). The site is reached from Susanville, California, the County seat, by driving 54 miles north northwest on California Highway 139 and four miles southwest on a County administered dirt/gravel road. The mineral deposit lies within Hayden Hill in the Hayden Hill mining district.

1.2 Project Description

The location of the Hayden Hill Project is dictated by the presence of the gold deposit. A thorough facilities site location study was completed to evaluate site alternatives for all of the major Project components. Fourteen alternative sites were investigated for the location of the tailings facility, two different pit designs were evaluated, three different location arrangements for the heap leach pad and facilities were investigated, and several possibilities for access road alignments were considered. The facilities arrangement found in this document represents the culmination of these studies. The reader is referred to the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (SRK 1991b) for a complete dissertation on the site selection and alternatives studied for the Project.

The Project would require disturbance of approximately 970 acres within portions of Sections 1, 2, 3, 4 and 5 T36N, R9E; Sections 5 and 6 T36N, R10E; Sections 1, 2, 12, 13, 24, 25, 35, and 36 T37N,

R9E; Sections 7, 18, 19, 20, 29, 30, 31 and 32 T37N, R10E; Sections 4, 9, 10, 15, 22, 27, 34 and 35 T38N, R9E; and, Sections 21, 28 and 33 T39N, R9E. (Adin and Hayden Hill 15 minute quadrangles).

The mineral deposit is located between elevations 5,400 feet above mean sea level (msl) and 6,300 feet msl on Hayden Hill (Figure 2). The Project site area, which encompasses the deposit and facility sites, ranges in elevation from 4,713 feet msl in lower Preston Canyon to 6,300 feet msl at the summit of Hayden Hill.

Surface water drainage in the area is to the north and tributary to the Pit River via Willow Creek and Ash Creek. The area to the southwest, including the Silva Flat area, is partially drained by Juniper Creek via an irrigation dam. With the exception of Willow Creek which flows northward along Highway 139, the site is drained only by intermittent water courses. Perennial surface water in the area is limited to Snyder Waterhole (NW 1/4, Appendix A, T36N, R9E), Silva Flat Reservoir (Sections 10, 11, 14, 15, T36N, R10E), Dillon Lake (Section 13, T36N, R9E), Snider Lake (Section 27, T37N, R9E), Indian Spring (SW 1/4, Section 32, T37N, R10E), and Daisy Dean Spring (SE 1/4, Section 6, T36N, R10E). Water from the two springs flows northward adjacent to Hayden Hill Road into Willow Creek. This watercourse flows only during excessive precipitation events and periods of rapid snow melt.

Groundwater is extremely deep in the Project area. Drilling around Hayden Hill encountered limited groundwater (10 to 20 gallons per minute) at depths greater than 1,000 feet below ground surface (BGS). The two proven sources of usable groundwater are located at Bunselmeier Springs (670 feet BGS, approximately four miles west) and in Preston Canyon (90 feet BGS, approximately four miles north).

The site falls generally into the upper Montane - lower Northern Coniferous Forest ecological zone, and is typified by shallow, rocky/sandy-loam soils and vegetation communities which include sagebrush shrub, northern juniper woodland, and yellow pine forest. Average precipitation at the site is about 14 to 16 inches per year, occurring as snowfall and sporadic afternoon thunderstorm events during late spring and early summer.

Gold was first discovered at Hayden Hill in the fall of 1869, a discovery which opened the northern territory of Lassen County. The small mining town of Hayden Hill was established, and by 1885 the town population was about 500 people, most of whom worked in the eight to ten active mines in the area. Gold was mined via small operations well into the 1900's.

The Hayden Hill Gold Venture was a joint venture between LGMI and Hayden Hill Gold Mining Company which was formed in late 1988 to conduct further exploration and to initiate a feasibility study to determine the feasibility of putting the property into production. The result of exploration drilling to date has been to delineate economically viable ore reserves of sufficient quantity and quality to warrant

detailed engineering feasibility studies and initiation of permitting activities under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes. Hayden Hill Gold Mining Company sold its interest in the Project to LGMI in March 1990, and the project is presently owned and operated by LGMI.

Presently, the design inventory of mineralized material is estimated at 45.3 million tons (mt), 9.6 mt of which is millable material and 35.7 mt of which is heap leach material. Annual production would come from 1.3 mt of millable material and 4.7 mt of heap leach material. Active mine life is estimated at 8 years. During the mine life, 85.7 mt of overburden and waste rock would be moved.

As described herein, the Project would involve development of one open pit. Mineralized rock would be crushed and processed using both a conventional milling Carbon-in-Pulp (CIP) process and a cyanide heap leaching process. Generally, after overburden is removed, ore grade material would be removed via standard drill and blast methods, hauled by truck to the crushing system, and hauled or conveyed to either the mill or the leach pads. Precious metals would be extracted from milled ore by agitation leaching and CIP extraction circuits, and from the heap leach solution using a carbon adsorption circuit (carbon columns). Doré bullion would be produced in the process plant via an induction furnace system and shipped to a refinery for final processing.

Employment during production operations would reach approximately 210 people. Additional ore body delineation drilling and facilities construction (including overburden stripping) is expected to take approximately six months and employ 150 people at peak. Initial capital costs are estimated at \$72 million (first quarter 1989 dollars) with an estimated annual payroll of \$10 million. The location of the site is presented in Figures 1 and 2. Figure 3 shows the proposed facilities layout.

The project is supported by extensive drill hole and assay data, metallurgical test data, and preliminary mine and processing engineering studies. The following Reclamation Plan is a fair and accurate description of the Project and incorporates accepted closure and reclamation planning. As the Project commences and moves through the development phase, changes and modifications may occur based on best engineering and management practices, regulatory direction, and permit stipulations.

The Project requires an Environmental Impact Report (EIR) under CEQA through Lassen County. The EIR has been developed to be suitable for use by the Bureau of Land Management (BLM) - Alturas Resource Area, in meeting its Environmental Impact Statement (EIS) requirements under NEPA. A formal Memorandum of Understanding (MOU) has been signed by the BLM, U.S. Forest Service (USFS - Modoc National Forest), and Lassen County stipulating that Lassen County will be the Lead Agency in preparation of a coordinated single EIR/EIS document.

1.3 Purpose and Use of the Plan

This document will be used by LGMI as a guide to the operation, closure and reclamation of the Project. By having a completed and approved Reclamation Plan prior to the beginning of the Project a higher level of efficiency can be employed at the site. The County and Federal agencies can use this document as a checklist of the Projects closure and reclamation related requirements. Further, this document will serve as the basis for further revisions as the on-site trials produce useable data which can enhance the proposed Plan. It is anticipated the on-site trials will produce valuable refinements to the reclamation procedures. Insights into the ecology of the existing vegetation types could be used to improve the success evaluation, reclamation, and monitoring procedures. Therefore, this plan will evolve as information is accumulated.

1.4 Goals and Objectives

The present land uses of the Project site are livestock grazing, watershed protection, wildlife habitat, and to a lesser degree, upland recreation. The post mining goals and objectives for reclamation of the Project site are to return the disturbed areas to a similar productive use.

1.5 Operator Information

OPERATOR:

Lassen Gold Mining, Inc.
55 South Lassen Street
Susanville, California 96130
(916) 257-2411

PROJECT GENERAL MANAGER: Mr. Larry Hansen

Lassen Gold Mining, Inc. is a wholly-owned subsidiary of Amax Gold Inc. (AGI), which is a publicly traded corporation 87% owned by AMAX Inc. (AMAX), a diversified minerals and energy corporation (traded on the NYSE) with headquarters in New York City. AMAX employs approximately 20,000 people worldwide. AGI, through its wholly owned subsidiary, Nevada Gold Mining, Inc., owns and operates the Sleeper Mine in Humboldt County north of Winnemucca, Nevada. The Sleeper Mine, a low cost gold producer, began operation in 1986 and employs more than 180 people. AGI through its wholly owned subsidiary, Wind Mtn. Mining, Inc. also owns and operates the Wind Mountain Gold Mine in northern Washoe county. The Wind Mountain Gold Mine began operation in May 1989, and employs more than 100 people.

The Hayden Hill Project will be managed throughout its life by Lassen Gold Mining, Inc. which may perform some of its responsibilities by engaging personnel of affiliated AMAX or AGI companies.

1.6 Land Status and Claimant/Claims Information

1.6.1 Land Status

The land status of the Project is a complex combination of private surface and minerals (including some patented mining claims), private surface and Federal minerals (Stock Raising Homestead Act lands), and Federal surface and minerals (administered by BLM and USFS). Lassen Gold Mining, Inc. presently controls 391 unpatented lode, placer and mill-site claims, and nine patented mining claims and mill sites on and surrounding the ore body and in and around the Project Area. Lassen Gold Mining, Inc. controls, by ownership, lease, purchase, or option agreements, all of the mineral and surface rights necessary for the Project.

1.6.2 Claimant

Lassen Gold Mining, Inc.

c/o Amax Gold Inc.

350 Indiana Street

Golden, Colorado 80401-5081

(303) 273-0600

2.0 ENVIRONMENTAL SETTING

Appendix A contains a discussion on the relevant points of the environmental setting for the Project. If more information is desired, the reader is referred to the Final EIR/EIS.

3.0 OPERATING PLAN

The operating plan is summarized in Appendix B of this document. If more detailed information is required, the reader should consult the Final EIR/EIS or the specific design reports.

4.0 RECLAMATION PLAN

Reclamation planning and implementation is anticipated to be an on-going program, concurrent with mining operations. The major part of the plan will be initiated upon termination of operations and mine closure. During operations, reclamation plans must be dynamic and capable of changing with the development of new ideas and techniques. As Project construction and mine development progress, particularly during the initial and closure phases, Project personnel will work closely with reclamation and other specialists from all applicable agencies to implement a practical and cost-effective closure and reclamation program. To initiate this process, LGMI entered into a formal Conservation Agreement with the Soil Conservation Service Pit Resource Conservation District (RCD) in late December 1988.

4.1 Statutory and Regulatory Requirements

Reclamation of areas disturbed by the Project will comply with the Federal Land Policy and Management Act (FLPMA) and the Forest Management Act, the Surface Mining and Reclamation Act (SMARA), and County requirements in order to minimize water degradation, air pollution, damage to aquatic or wildlife habitat, and erosion, while at the same time providing for a continuation of existing uses including livestock grazing, watershed protection, wildlife habitat, and upland recreation. The State of California will measure compliance of the Reclamation Plan in accordance with Title 14, California Code of Regulations, Section 3502. The USFS will evaluate the Reclamation Plan with respect to Title 2800 of the Forest Service Manual, Chapter 2840. On BLM administered lands it is the BLM's responsibility to ensure mining operations are completed in conformance to the 36 CFR 228 Subpart A and 43 CFR 3809 regulations.

4.2 Post-Mining Land Use

Present or pre-mining land use of the Hayden Hill area is (in no particular order) livestock grazing, watershed protection, wildlife habitat, and to a lesser degree, upland recreation.

Post-mining land use generally is expected to be similar. The expected short and long-term changes, alterations, and modifications in these land uses are discussed in depth in the EIR/EIS for the project. Concurrent, closure, and post-closure reclamation activities will be directed primarily toward future livestock grazing, watershed protection, and wildlife utilization. These land uses are consistent with the land management plans for the area.

4.3 Summary of Disturbance

Table 4.3-1 is a summary of the disturbances anticipated at the site. As can be seen from the Table, most of the disturbance at the site will occur in the first year. This is due to the construction of the various facilities associated with putting the Project in production. Interim and concurrent reclamation will begin immediately in areas where this is possible.

4.4 Reclamation Practices

The reclamation approach and procedures outlined in this section were developed for the site-specific conditions of the Project. The Reclamation Plan for the Hayden Hill Project is required by SMARA, BLM and USFS regulations and is administered by Lassen County, the lead State agency and the BLM, the Lead Federal agency. The procedures are designed such that the mining-related disturbance areas are reclaimed to a productive use similar to pre-mining land uses and the reclaimed areas are visually and functionally compatible with the surrounding topography.

The reclamation procedures proposed for the Hayden Hill Project incorporate four basic components:

- Establishment of stable surface, topographic, and drainage conditions that are compatible with the surrounding landscape and serve to control erosion.
- Establishment of soil conditions most conducive to establishment of a stable plant community through stripping, stockpiling, and reapplication of suitable growth media.
- Revegetation of disturbed areas, where practical, using species adapted to site conditions in order to establish a long-term productive biotic community compatible with proposed future land uses.
- Consideration of public safety through the stabilization, removal, and/or fencing of structures or land forms that could constitute a public hazard.

The general reclamation goal at the Hayden Hill Project is to reclaim the site to a stable, functioning landscape unit/ecosystem to allow essentially the same land uses as currently exist. Based on the existing site conditions, the Reclamation Plan proposes to establish either an Upland Shrub or grassland vegetation type on most of the site. These vegetation types represent transition zones between the Low Sagebrush and Jeffrey Pine/Mountain Shrub vegetation types and are important ecologically for grazing and cover for animal life. The reclaimed landscape will also contain areas of Low Sagebrush and Jeffrey Pine/Mountain Shrub vegetation where topographic conditions, aspect, soil requirements, and drainage

**TABLE 4.3-1
SUMMARY OF DISTURBANCES
HAYDEN HILL**

Facility	1st Year (Acres)	Total Dist. (Acres)	General Location
Mine Pit	100	176	Section 31
Waste Rock Dump (Complete Benching Alt.)*	50	226	Section 31, 36
Topsoil Storage	10	22	Sections 1, 6, 36, 31
Mill/Crusher/Process Complex (Including office/shop facilities)	42	68	Sections 1, 36
Tailings Impoundment	131	131	Section 1
Leach Pad	199	199	Section 1
Ponds	7	23	Section 1
Administration Building	2	2	Section 36
Roads, pipelines fencelines, powerlines, miscellaneous	113	123	Throughout
Total 1st Year Disturbance	654		
TOTAL (over mine life)		970	

*Note: This table includes 226 acres as the area of disturbance for the waste rock dump constructed as per the Complete Benching Alternative and not as per the Proposed Action. Please refer to Section 2.3.1.3 of the Project EIR/EIS.

conditions are conducive to establishment of these communities. The long-term revegetation objective will be to establish vegetation types which are evolving toward the originally disturbed vegetation types. Revegetation of disturbed areas can take considerable time under certain conditions or in some cases is not possible.

Not all disturbed areas can be revegetated successfully within a reasonable time period. Open hard rock pits in arid climates are an example of such conditions. Steep cut pit walls and slopes are a residual of mining which cannot be revegetated but can be physically manipulated for stability and to provide habitat for raptor and passerine wildlife species.

The following sections discuss the various aspects of reclamation in more detail. Figure 4 shows post-reclamation contours for reclaimed areas. Figure 5 shows pre- and post-mining cross sections for the waste rock dump.

4.4.1 Waste Placement

Appendix B, at Sections 3.4.1, 3.5.2 and 3.6, contains a discussion on the waste placement for the Project. Please refer to this section for this information.

4.4.2 Contouring/Shaping

The approximate post-reclamation contours of the Project area are shown on Figure 4. Slopes will be shaped for reclamation during the material placement or removal except in the leach pad area. Depending on the type of material, erodibility, and the practical considerations of the mining process, overall slope grades will range from 1H:1V to near flat. The pit highwalls will be allowed to erode to the natural angle of repose over time after closure.

Final grading of cuts and fills in unconsolidated material will create undulating land forms with overall slopes no greater than 2.5H:1V that are stable, do not allow pooling or ponding, and blend with the surrounding undisturbed topography. Final grading efforts will minimize erosion potential and additional surface disturbance and will facilitate the establishment of post-mining vegetation. Sharp edges will be rounded and straight lines will be altered to provide contours which are visually and functionally compatible with the surrounding terrain.

The heap leach pad and tailings facilities will be re-contoured at Project closure to facilitate drainage and alter straight lines. Drainage will be routed as discussed in Section 4.4.3. The slopes will be pulled back

at the top to facilitate drainage and smooth the overall slope angle. The diversion ditches surrounding these facilities will remain for approximately two years following closure. Pond liners will remain until the requirements of the NPDES permit are reached. The final contours will be as shown on Figure 4.

Loose faces of slopes will be "walked" with a dozer to partially compact the surface prior to growth media placement. Haul and access roads requiring reclamation will be graded or have the edge berm pulled back prior to revegetation. In addition, compacted surfaces will be ripped or scarified prior to growth media placement and revegetation.

4.4.3 Project Drainage Requirements

Each facility, including the waste rock dump, the heap leach pad, the tailings facility, the process facilities area, and the access road, will have specific drainage requirements. The facility and its drainage requirements are addressed in the next few paragraphs, whereas erosion and sediment control requirements are addressed in subsequent sections as they relate to their individual drainage basins.

4.4.3.1 The Waste Rock Dump Basin

The waste rock dump is anticipated to be stable with an overall slope of 3H:1V. The waste rock will be hauled directly from the pit to the dump by trucks. It will be end dumped, by truck, directly from the pit at the angle of repose, estimated to be 1.3H:1V. Benches will be formed, as the dumping proceeds, in 100 foot (vertical) intervals to effect the overall 3H:1V slope. The benches will be sloped towards the inside of the dump and "V" ditches constructed to capture stormwater as it flows across the bench. The "V" ditches will be constructed such that one side will have a 2H:1V side-slope and the other side a 1.3H:1V side-slope, to match the waste rock angle of repose. Additionally, the "V" ditches will be sloped at 0.5%, along the length of the bench to provide a direction for stormwater to exit the dump. The 100-year, 24-hour design flow for the typical bench "V" ditch is estimated to be 6.5 cubic feet per second (cfs).

The waste rock dump will be situated in an area designated as the Waste Rock Dump Sub-basin (see Figure 6). The sub-basin is further divided into east and west portions. The west portion will contain undeveloped land and the entire waste rock dump, except those sections draining to toe drains which are better served by collection in the east portion. The east portion of the Waste Rock Dump Sub-basin contains some natural ground and toe drains which capture flow from portions of the waste rock dump.

The majority of the stormwater flow from the west portion is generated from the waste rock dump. The flow is captured in a series of bench "V" ditches and routed to the west side of the dump. In most cases the "V" ditch will exit the bench at the dump/natural ground interface and continue to natural drainage

channels by way of the heap toe drains. Whenever the stormwater must travel a distance greater than one lift of the waste rock dump (100 vertical feet), the stormwater ditch will exit the bench via a storm runoff chute. These chutes will be constructed on the side slope of the dump with waste rock (see Figure 9). The chute empties into an energy dissipation basin at the toe of the dump. The energy dissipation basin as shown on Figure 9 is generally a widened portion of the existing channel, armored with riprap. Once in the natural drainage channel, the flow from the dump area and the natural area will continue to the sediment collection facilities at the bottom of the drainage. The anticipated peak flow generated from the west portion of the Waste Rock Dump Sub-basin, due to the 100-year, 24-hour design storm, is approximately 15 cfs.

The east portion of the Waste Rock Dump Sub-basin will collect storm runoff from the natural ground plus the flows collected in the waste rock toe ditches near the bottom of the dump. The flows will continue in a manmade diversion ditch, designed and constructed by others (KP 1990), for use during the mine production life. From the diversion ditch, the stormwater flows towards the sediment collection facilities by way of a chute (Figure 6); also designed and constructed for use during mine operations. The peak discharge of stormwater generated from the east portion of the Waste Rock Sub-basin due to the 100-year, 24-hour storm is estimated to be 11.2 cfs.

The flows from the east and west portions of the Waste Rock Dump Sub-basin merge just upstream of the initial detention pond. The two sediment collection ponds, designed and constructed to service the area during the mining operations, may be left in place to guard against sediment loading downstream prior to the establishment of vegetation. The assumption is made that sediment generation will decrease as the vegetation is re-established and, therefore, if the sediment collection ponds are adequate during operations, they will also be adequate for the reclamation period. The cumulative peak runoff from the east and west portions of the Waste Rock Dump Sub-basin, into the detention ponds, due to the 100-year, 24-hour storm is estimated to be 43 cfs. The anticipated peak stormwater discharge from the Waste Rock sub-basin is approximately 44 cfs. For this analysis, the combined storage volume for these ponds was estimated, from the design plans (KP 1990), to be 28 acre-ft.

4.4.3.2 The Facility Basin

On the opposite side of Hayden Hill from the waste rock dump, lies the Facility Basin. Contained within the "Basin" are the Heap Leach Facility Sub-basin, the Tailings Facility Sub-basin, the Facility Sub-basin, the Haul Road Sub-basin and the Detention Pond Sub-basin (Figures 7A and 7B).

The Heap Leach Facility Sub-basin

The first drainage issues to be addressed are those concerning the Heap Leach Facility Sub-basin. Contained within the sub-basin are the process solution ponds, the heap pad perimeter ditch and the heap

leach facility. The heap requires an overall slope of 2H:1V to remain stable after reclamation measures are performed. The heap will be built by conveyor loading ore at the angle of repose, estimated to be between 1.1H:1V to 1.3H:1V. Lift heights are anticipated to be 10 to 20 feet, with the total height of the heap proposed to be 120 feet. Upon closure of the heap leach facility, side-slopes will be smoothed to effect a uniform 2H:1V slope. Some benches will remain. Stormwater draining from the side-slopes of the heap will be collected in the existing heap perimeter ditches and routed to the sediment collection ponds (formerly the process solution ponds). The contours on top of the heap will be graded to direct flow to a riprap lined chute to be constructed on the heap side-slope. The stormwater collection ditch on the surface of the heap will have a 10 foot bottom, a 2 foot depth and 10H:1V side-slopes. The riprapped chute design is by others (KP 1990), and is expected to maintain these minimum standards. The riprap lined chute will empty into a ditch which in turn routes the runoff to the sediment collection ponds, where the water velocity is decreased, thus allowing sediment deposition. Decanted stormwater will flow through the series of ponds, via unlined level spillways, until the stormwater empties into the existing natural swale. The peak discharge expected from the top of the heap leach facility and down the riprapped chute due to the 100-year, 24-hour design storm is approximately 10 cfs. The flows from the same design storm passing through the series of sediment collection ponds is 20 cfs. The increased flow is due to the routing of flows from the Haul Road Sub-basin, discussed later, through the ponds.

The Tailings Facility Sub-basin

Adjacent to and west of the Heap Leach Facility Sub-basin is the Tailings Facility Sub-basin (Figures 7A and 7B). The sub-basin contains the perimeter ditches, process water ponds, decant structure and the tailings containment facility. The tailings containment facility will be built, over its life cycle, to a total height of approximately 75 feet. The embankment sides will have been raised by mechanical methods with fill materials creating a basin for tailings deposition. The general flow path for the tailings will be from the north and northeast to the decant tower and decant basin in the southwest corner. The tailings facility is designed as a self contained impoundment, with the solutions and stormwater remaining within the impoundment or within the process water pond to the south. To maximize material storage, the tailings will be deposited at a fairly shallow slope. Therefore, in the same manner as with the heap leach facility, when tailing deposition ceases, surficial grading improvements are required to aid stormwater drainage. The grading will route the drainage towards the area of the former decant pond. Before the tailings surface drainage construction is completed, a spillway will be built from the southwest corner of the facility to the process water pond. The abandoned tailings decant structure will be sealed in place by filling the pipe with grout. In addition, the freeboard berm surrounding the area of deposition will be removed and the tails area graded to provide drainage towards the spillway. The estimated peak flow from the 100-year, 24-hour storm through the tailings facility will be 26.5 cfs. The ditch on top of the facility will have the following configuration: a 10 foot bottom, a 2 foot depth, and 10H:1V side-slopes. The runoff spillway, decant pond, process water pond and grouting design details are by others (KP 1990) and maintain these minimum standards.

The Facility Sub-basin

Directly north of the Tailings Facility Sub-basin is the Facility Sub-basin which encompasses the process facilities and their appurtenances. During operations, the drainage plan will be implemented according to the layout proposed and designed by others (KP 1990). According to these plans, all flows from the shop and warehouse area will be collected and directed southwest to the stormwater collection ditch adjacent to the haul/access road. The fuel docks and wash bay flows will be maintained separate from normal storm runoff by containment berms constructed around their perimeters. The area to the north and northeast of the shops, below the haul road, will drain south through a culvert under the road, then east of the shop area to the stormwater collection ditch along side the access road. The mill area is predominately flat. Any accumulation of stormwater will be directed south, past the barren pond, to the stormwater collection ditch. Stormwater diversion ditches will be constructed uphill of the mill facilities to route the stormwater around the mill facilities to the stormwater collection ditches. Storm flow from the crusher and laydown area will be directed southwest towards the access road. Flow from the haul road will be routed towards the stormwater collection ditch as shown on Figure 7A. Culverts and ditches will maintain the flow on the north side of the access road in the stormwater collection ditch, which will drain west to join with flows from the mill area, shop and warehouse.

When the process facilities are no longer needed, the structures will be dismantled, the roads crossing ditches will be breached, and culverts and material stockpiles removed. Upon completion of demolition, supplemental grading of the facility grounds will commence. The object of the grading will be to re-establish suitable reclamation drainage patterns, facilitate collection of stormwater, and break up the overland flow regime. Wherever possible, the existing ditches will be used. To dissect the Facility Sub-basin into smaller drainage areas, trapezoidal stormwater diversion ditches will be excavated (see Figure 7B). The trapezoidal stormwater diversion ditches have a base width of 3 feet, depth of 1.5 feet (with one foot of dry free board) and have 2H:1V sidewalls. Their capacity will be approximately 15 cfs at the anticipated slope of 16 percent. The stormwater diversion ditches will carry the stormwater to the stormwater collection ditch situated on the north side of the Tailings Facility Sub-basin. This collection ditch, some of which is existing, will have a base width of 5 feet, a depth of 1.75 feet, 2H:1V sidewalls, and a capacity of 20 cfs at the anticipated minimum slope of 1.5 percent. These ditches are designed to route the flow resulting from the 100-year, 24-hour design storm. Once in the stormwater collection ditch, the flow will continue south around the tailings facility to the detention pond in the southwest corner of the property.

The Haul Road Sub-basin

To the east of the Facility Sub-basin lies the Haul Road Sub-basin (Figures 7A and 7B). This sub-basin contains a portion of the crusher area, a haul road, a drainage ditch and a portion of the pit. At Project closure, the crusher facility and haul road will be dismantled and the area regraded to enhance storm runoff flow to the stormwater collection ditch. The ditch is anticipated to be constructed during

operations, and only minor modifications would be required for reclamation. During operations, the ditch will be riprapped for the segment in which the slope is greater than 3 percent. As the slope flattens to below 3 percent, straw bale check dams will be placed, at intervals less than 250 feet. Modifications would include the removal of culverts under various roads and the drainage ditch reconstructed near its lower reach to flow into the sediment ponds located in the Heap Leach Facility Sub-basin (see Figure 7B). The peak flow anticipated in the ditch from the Haul Road Sub-basin, as a result of the 100-year, 24-hour design storm is approximately 15 cfs.

The Detention Pond Sub-basin

The final basin shown on Figure 7B is the Detention Pond Sub-basin, named for the final detention pond for the mine facilities. The detention pond is located in the southwest corner of the Project. During mine operation, this facility will be utilized as the final impoundment for stormwater, and the resulting sediment, prior to the stormwater flow off-site. The intentions are the same for this facility during the reclamation phase. The Detention Pond Sub-basin area is anticipated to remain in its natural state, with the exception of the pond construction. The natural existing drainages will be utilized to route storm flow from the sub-basin to the detention pond. The estimated peak flow rate to the detention pond from the sub-basin, due to the 100-yr, 24-hour design storm is, 26 cfs. The detention pond is anticipated to act as a buffer to reduce the peak discharge of stormwater from the Project.

The anticipated peak total flow rate entering the detention pond from the entire facility's area as a result of the 100-year, 24-hour storm is 45 cfs. The anticipated peak flow rate exiting the detention pond is estimated to be approximately 40 cfs. The difference in flow rates is attributed to the attenuation of the peak flows as a result of the storm water detention.

4.4.3.3 The Hayden Hill Access Road Basin

The Hayden Hill Access Road Basin lies on the opposite side of the property, east of the process facilities and the waste rock dump. The basin is divided into 13 sub-basins called Area 1 through Area 13 (see Figures 8A and 8B).

The largest impact, with respect to stormwater and sediment generation, to the Hayden Hill Access Road Basin will be the improvements to the access road prior to Project operations. The proposed reconstruction of the access road will result in a widening of the current 14 foot driving width to a driving width of 24 feet. The improved road will be widened primarily by cutting into the uphill bank, thus diminishing the requirement of down slope fill, which would infringe upon the adjacent creek. For the most part, the post-construction drainage courses will not differ from the existing drainage courses, however, some reduction of runoff will occur due to the reduction of the contributing area as a result of the pit expansion and associated haul road construction at the top of the basin. Stormwater drainage will

most likely be enhanced by the removal and replacement of old culverts under the access road and the construction of a roadside ditch capable of carrying the anticipated 100-year, 24-hour storm flow.

4.4.4 Specific Erosion Control Measures

Revegetation of a disturbed area, as outlined in the Reclamation Plan, is an effective means of controlling sediment transport. Prior to the establishment of vegetative cover, measures will be implemented to reduce or prevent soil migration from the Project onto adjacent properties. These measures include: Constructing interception ditches which would typically have shallow slopes and can be armored with riprap as necessary; sediment collection basins; rock dikes; and straw bales as check dams or placed around culverts in conjunction with riprap. Each method has merit, especially when used together as an entire erosion control program. This section will explain in detail the placement and use of each of these measures by basin.

The initial control will come from interception ditches and riprap. The shallow slopes and riprap act to decrease the flow velocity of the stormwater, thereby increasing sediment deposition. The riprap will protect the ditch from incurring additional erosion. When additional deposition is required in the shallow slope ditches, straw bale dikes or small rock dikes will be placed in the flow line of the ditch. In locations where the area is available, sediment collection ponds will be placed, as required. A final measure to protect downstream locations from sediment loading, would be to place straw bales around culverts. In addition, riprap will be placed around the inlet and the outlet of all culverts (see Figure 9).

4.4.4.1 The Waste Rock Dump Basin

The waste rock dump will be designed with 100 foot tall lifts and angle of repose slopes above benches that slope towards the hill. To moderate the effects of erosion, the benches and the slopes of the waste rock dump will be revegetated by a mixture of grasses and shrubs. Until the vegetation establishes, measures are required to deal with the erosion potential.

The initial measure is to collect sediment prior to the establishment of vegetation on the reclaimed areas. Sediment will be collected by the bench drains located on the inside of each bench. In places, these ditches will be armored with riprap to collect sediment, which in turn, would foster growth of the surrounding plants. The runoff collected in the armored stormwater ditches will be routed off the dump and towards the natural drainage course. By the nature of their construction materials, these ditches make excellent stormwater transport channels. The waste rock is generally a hard material which has a high roughness coefficient which provides energy dissipation. In the natural segregation process that occurs when building a waste rock dump, the material used for riprap becomes readily available. This material will be placed in the bench ditches as required. The bench ditches will continue to serve as sediment

catchments until the sediment load is reduced by the establishment of the vegetation; at which time the ditches will continue to transport stormwater.

In some locations, the bench ditches direct runoff to stormwater chutes. These chutes will be designed and constructed to convey the storm event runoff down elevation drops of greater than one bench, and to mitigate the erosional tendencies of high velocity water flow (see Figures 6 and 9). The stormwater will discharge to the bottom of the chute into a stilling basin armored with riprap. The velocity and energy of the stormwater will dissipate in the stilling basin and some of the sediment will drop out. The stormwater will continue to travel the riprapped watercourse (man-made or natural) to the sediment collection ponds at the bottom of the drainage.

The sediment collection ponds have been designed by others (KP 1990), to collect sediment during the active mine life. Therefore, with the estimated reduction of sediment loading which accompanies the maturation of the vegetation after closure, the facilities are estimated to perform as required without additional modifications. The sediment collection ponds will be left in a natural state, except for the placement of riprap to armor locations where the flow enters and exits. Additionally, in an effort to discourage the creation of erosion features through the sediment pond, a small (1½ foot tall), armored berm will be constructed where the flow enters the upper reach of each sediment collection pond. The berm will act as a flow dispersal structure and will reduce the potential scour which would disturb the revegetation process in the facility.

4.4.4.2 The Heap Leach Pad Sub-basin

The operation of the heap leach facility would require reclamation to proceed after leaching is concluded. The erosion control measures conducted on the heap would begin with the drainage improvement procedures outlined in Section 4.4.4.1; the regrading of the top surface of the heap, the smoothing of the out slope of the heap to a 2H:1V slope and the riprap chute construction. Seed drilling and straw crimping on the top of the heap would follow. Seed drilling increases the opportunity of seed/soil contact which is paramount for the production of viable vegetation. The side-slopes of the heap, due to their steepness, may require proven, effective, alternative methods of seeding and erosion protection such as hydroseeding/mulching or hydroseeding/straw mulching.

The earthen ditches at the toe of the heap slopes will continue to collect and transport runoff from the heap to other collection ditches and into the sediment ponds (Figure 7B). Where anticipated velocities warrant, riprap will be placed in the collection ditches to provide erosion protection. For example, the runoff chute constructed on the side-slope of the heap is one such protection measure. The chute is intended to route the stormwater from the crest of the heap to the toe, presently anticipated to be 120 vertical feet. At the toe of the heap, the stormwater will merge with flows from the perimeter ditch and

will continue in a riprap lined ditch to the sediment collection ponds. Similar to the sediment ponds below the waste rock dump, the sediment ponds (formerly process solution ponds) downstream of the heap leach facility will allow the sediment to drop out by providing quiet solution time with little or no agitation. The flow will continue from the sediment ponds via natural drainage, and through the final detention pond. From the final detention pond, stormwater will flow out of the mine site in the natural swale.

4.4.4.3 The Tailings Facility Sub-basin

The tailings facility has an erosion control plan similar to the heap leach facility. Drainage and grading provisions will be performed to facilitate stormwater routing. Drill seeding and straw crimping of the slightly sloping top surface of the facility will follow. The embankments will have been reclaimed concurrently with construction. The spillway will carry stormwater from the top of the facility to the reclaimed pond at the toe of the tailings slope. The perimeter diversion ditches will be armored with riprap, as required. These ditches will route the runoff from the side-slopes of the reclaimed tailings facility to the reclaimed pond. The reclaimed pond will calm the surface water, allowing the sediment to drop, prior to exiting and continuing on to the detention pond at the southwest corner of the property.

4.4.4.4 The Process Facility Sub-basin

Directly north of the Tailings Facility Sub-basin is the Process Facility Sub-basin. During operations, the drainage plan will be implemented according to the design (KP 1990). The erosion control plan complements the drainage plan in the following manner. The topsoil stockpile areas will be reseeded to establish protective vegetation. All flows from the shop and warehouse area, and above, will be collected and directed southwest to the riprap lined ditch adjacent to the access road. The ditches around this area will be riprapped as well as the culvert inlet and outlet. The fuel docks and wash bay flows will be maintained separate from normal storm runoff by containment berms constructed around the perimeter of their areas. Any accumulation of stormwater in the mill area will be directed south, past the barren pond, to the access road side ditch. The access roadside ditch will be riprapped through this stretch, including the inlet and outlet of the culvert under the shop entrance road. The interception ditches constructed uphill of the mill facilities to route the stormwater around the mill facilities, should be riprapped for those stretches which carry the stormwater perpendicular to the contours. The storm flow from the crusher and laydown areas will be directed southwest towards the access road. Culverts and riprapped ditches will maintain the flow on the north side of the access road, which will drain west to join with flows from the mill area, the shop and warehouse.

When the processing of ore is complete and as the demolition of the existing structures located in the Facility Sub-basin is carried out, all material stockpiles will be removed and distributed as required. The

ground surface will be prepared, and drill seeding and straw crimping will commence. Due to the moderately steep slopes in the area, the stormwater collection ditches will be armored with riprap to minimize erosional tendencies. These ditches will route the stormwater to the main diversion ditch adjacent to the north and west sides of the tailings facility. Straw bale dikes will be placed, at intervals not to exceed 250 feet, in the flow line of the ditch, to trap sediment generation prior to vegetation establishment. The stormwater flow will continue in a southerly direction to the final detention pond at the southwest corner of the property.

4.4.4.5 The Haul Road Sub-basin

East of the Facility Basin lies the Haul Road Basin. This area of disturbance includes parcels of land surrounding the pit, the pit perimeter haul road and a stormwater diversion ditch. The area will be graded to smooth disturbance and efficiently direct stormwater flow to the main diversion ditch. Drill seeding and straw crimping will follow. These activities will take place simultaneously with those in the Facility Basin area. Because of the steepness of some of the ditch slopes, the stormwater diversion ditch will be riprapped for its entire length; as it courses the bottom of the Haul Road Basin and continues between the Tailings Facility Basin and the Heap Leach Basin into the sediment collection basin. Straw bale dikes will be placed, at intervals not to exceed 250 feet, in the flow line of the ditch, to trap sediment generation prior to revegetation. Flows will mingle in the sediment pond and then drain into the final detention pond and, finally, continue off-site.

4.4.4.6 The Hayden Hill Access Road Basin

The Hayden Hill Access Road Basin, divided into the sub-basins depicted as Area 1 - Area 13 on Figures 8A and 8B, represents the bulk of the area upstream of the Hayden Hill Access Road. The analysis of the Hayden Hill Access Road Basin involved a complex dissection of Areas 1-13 integrated with a detailed interpretation and review of the SED-CAD results. Each area was divided into disturbed and undisturbed portions as designated by the anticipated road improvements. The undisturbed area represented that part of the basin left in its historic state. The disturbed area included the road, the roadside ditch and the anticipated cut slope area.

Maintenance would be conducted as required after each major storm event.

At present, stormwater courses the natural basin drainageways, picking up the historic sediment load from the natural drainages. The drainageways are intersected at many points by the Hayden Hill Road. The Hayden Hill Road is 14 feet wide and will be widened for the Project. Presently, when stormwater from each of the sub-basins meets the existing road, the tendency is for the stormwater to overtop the road. This action causes the stormwater to cross the road (picking up more sediment) or continue down the road

in the furrows created by vehicles (scour). The disturbance caused by road improvements will be reclaimed as soon as possible. Once revegetation is complete, there will be an overall reduction of sediment loading.

Before revegetation is achieved, there is anticipated to be an increased sediment load from the Hayden Hill Access Road improvements. The load is to be kept from the stream through the implementation of a number of permanent and temporary sediment controls. The new road will have a "V" ditch constructed to allow capture and control of the sediment. The ditches will be riprapped in certain areas and, prior to complete revegetation, will be periodically monitored and cleaned of debris. New culverts that have been sized for the 50-year, 24-hour storm event will be installed. The minimum sized pipe will be 18 inches in diameter which, in most cases, results in an increase in pipe size over the old, existing culvert.

Temporary measures to be implemented to reduce the sediment load include: straw check dams placed in the flowlines of the ditches, and as necessary straw bales placed around the entrances to culverts (Figure 9). The placement of the straw bales will allow for the additional filtering of fine sediments from the drainageway runoff prior to entering the adjacent ephemeral stream. The bales provide an effective "natural" form of sediment control that can be left in place and will eventually blend in with the surrounding topography. Manmade or synthetic silt fences must eventually be removed; a process which can disrupt the revegetative cycle and potentially cause sediment deposition. When maintained as part of a monitoring and cleaning program, straw bales perform the filtering process as required.

A more durable type of erosion protection will include extensive placement of riprap around the culvert inlet and outlet to reduce the erosion caused from entrance and exit conditions. In addition, where space allows, sediment collection basins will be constructed adjacent to the road. These shallow basins will perform the same functions as outlined previously: they will slow the velocity of the water, allowing for deposition of sediment within the controlled area of the basin. Small riprap berms will be placed at the upstream end of the sediment facilities to disperse the incoming low flows, thereby diminishing the possibility of sediment remobilization.

4.4.5 Growth Media Placement

During final reclamation, growth media will be replaced at a minimum 12-inch depth on areas to be revegetated, if growth media reserves prove sufficient. Based on the Project soil survey sufficient growth media will be available. If an excess of growth media is available, the tailings impoundment area followed by the leach pad will be given priority for additional growth media replacement. If growth media has become compacted while in the stockpile, it will be tilled prior to replacement in an attempt to regain pre-removal bulk densities.

Before growth media placement the subsoil surface will be roughened by ripping or disking to ensure good contact. The growth media will be dumped, spread, and graded using a minimum of passes to limit reduction in bulk density. Walking with a dozer will be done following growth media placement to lightly compact the soil, create micro sites for water retention and to prevent erosion.

4.4.6 Growth Media Amendments

Fertilizer will be applied at the rate indicated by reclamation trials and soil testing prior to seeding. It is anticipated that revegetated areas will require maintenance fertilization based on the technical studies completed to date.

Fertilizer will be applied prior to or at the time of seeding. Agricultural soils testing will be used in areas to be reclaimed for grazing, and the cover and species richness observations from trials will be used in areas to be reclaimed for wildlife habitat, to determine the rate and type of fertilizer.

4.4.7 Seedbed Preparation

Seedbed preparation, reseeding, and transplant efforts for areas to be revegetated will take place after grading, stabilization, and growth media placement and will be performed as follows:

- Compacted surfaces will be loosened and left in a rough condition by ripping, followed by disking or other mechanical manipulation. Loose erodible surfaces may need to be "dozer-tracked" to prevent sloughing before amendments, seed, and mulch are applied.
- Soils and substrate materials will be tested for fertilizer and other amendment requirements. Amendments and other seedbed materials will be applied in the amounts and rates specified by the tests. Where amendments are applied, the surfaces will be disked, raked, or treated to incorporate the amendments into the top four to six inches. Repeated applications of fertilizer will be made if indicated by the soil tests or vegetation monitorings.
- The prepared surfaces will then be seeded using the mixtures and seeding rates as shown in Table 4.4-1 recommended by the USFS, BLM, and the SCS. Seeding will either be by rangeland drill, broadcasting or hydraulic seeder depending on working area and steepness of slope.
- Certified weed free straw or other protective mulch for soil cover will be applied, if necessary, and mechanically crimped or anchored with a chemical tackifier, if

appropriate. Erosion control netting or matting may need to be applied on steep or sensitive slopes requiring additional control.

4.4.8 Seeding/Planting

The rocky terrain and soil materials at Hayden Hill may dictate broadcast seeding methodology (either cyclone seeders or, in some cases, a hydroseeder) although a range drill will be used in suitable flat terrain.

Jeffrey pine seedlings will be planted on the bench areas of the waste rock dump and on some of the upper benches and bottom of the pit. The seedlings will be planted at the rate of 150 containerized trees per acre. Seedling planting will follow seedbed preparation, seeding, and straw placement and crimping.

4.4.9 Seeding Mixtures and Rates

The seed mixtures to be used on site have been determined by seed availability, the pre-mining vegetation and habitat types that existed in the area and known climatic and soil conditions of the Project area. Early in the operational life of the mine, site-specific reclamation trials will be conducted by LGMI to test and refine the proposed treatments and develop fertilization rates and native seed mixes better suited to the Hayden Hill area. The seed mixtures presented as part of this application are preliminary in nature and will be finalized based on results of site-specific reclamation studies and consultation with the BLM, SCS and the USFS. Additional forb species may be added to the seed mixtures following the field trials. As recommended by SCS, the seed mixtures contain legumes as well as grasses and shrubs. All legume seed will be inoculated with the correct rhizobium bacterial strains prior to planting. The seed mixtures will be either broadcast seeded or drilled. Final choice of plant species will be dependent on commercial availability of seed. Any substitutions to the seed mixes will be approved by the county. The proposed seed mixtures are shown in Table 4.4-1.

The Proposed Seed Mixes were determined by comparing those species found on site with lists of proven reclamation species for this area, recommendations from the California Division of Mines and Geology, the SCS, BLM and examinations of the technical literature. The mix is intended to provide a balance between grasses, legumes and shrubs. Intermediate wheatgrass and Pubescent wheat grass are known for easy establishment and are included as reliable cover and to act as a nurse crop to the other components.

The Quick Cover Seed Mixture was developed to provide rapid stabilization of problem areas. This mixture will be used on steep slopes or areas where runoff has collected and caused vegetation failure. All of the species in this mix were chosen for their ability to rapidly stabilize soils.

The Interim Seed Mixture was developed, as above, to contain a balance of components to assure a high level of revegetation success at temporary reclamation sites. All of the species in the Interim Seed Mix are proven reclamation species.

4.4.10 Mulching/Polyacrylamides

Mulch, either weed-free straw or commercial hydromulch, will be applied during or following seeding. Straw mulch will be applied at a rate of 2 tons/acre and secured using either chemical tackifier or mechanical crimping methods. If a hydroseeder/hydromulcher is employed for very steep slopes, commercial, tackified, hydromulch will be applied at the rate of 1 ton/acre.

Polyacrylamides, soil additives used to increase the soils water holding capacity, will be tested for effectiveness in on-site trials. If the trials prove beneficial they may be used at the site.

4.4.11 Control of Undesirable Species

During vegetation establishment weed control practices will be implemented to limit the growth and spread of noxious weeds and to ensure that revegetation is successful with the proposed seed mixtures. LGMI will work with Lassen County, the BLM and the USFS as appropriate to curtail the spread of noxious weeds throughout the Project area. The control program will include utilizing certified weed free straw in the reclamation program as well as certified seed with a low weed content.

If necessary, LGMI will undertake a control program to eradicate noxious weeds in the area and along roads as appropriate. The spraying program will be timed so that spraying occurs after noxious weeds can be accurately identified and before these plants have matured and produced viable seeds. Herbicides will be chosen based on their hazard potential to other plants, animals and aquatic life found on the Hayden Hill site. No herbicide with a residual effect which lasts longer than the growth media will be in the stockpiles will be used on the growth media stockpiles. No spraying program will be undertaken without the County Agricultural Commissioner's, and (on public land), the BLM's or USFS's approval. All applicators would be appropriately trained and licensed. In addition, they will be briefed in the identification of the sensitive species (including threatened and endangered) and noxious weeds targeted on the Hayden Hill site.

4.5 Schedule

Reclamation activities at each phase of mine development will be timed to take advantage of optimal climatic conditions. Reclamation activities will also be scheduled to occur as soon as possible after the mining activities in a particular area are completed, thus minimizing erosion and sedimentation problems. General scheduling procedures to be followed include:

- Grading and drainage control establishment, and maintenance will be conducted in mid to late summer;
- Seedbeds will be prepared in late summer or early fall just prior to seeding; and
- Seeding will be completed in mid to late fall in order to take advantage of winter and spring moisture. Alternatively, early to mid-spring seeding will take place when appropriate or weather constraints or other unavoidable circumstances make fall seeding unfeasible.

Most reclamation activities will take place at the time of mine closure and will be considered final reclamation. However, during the life of the Project, concurrent reclamation and interim reclamation will occur to reduce both erosion and the potential for off-site degradation resulting from runoff and sedimentation to surface waters.

Concurrent reclamation refers to reclamation activities that can be carried on at the same time as ongoing mining activities. Concurrent reclamation can be advantageously employed on disturbed areas that have served their purpose and are ready to be graded to final reclamation contours. Where possible during the life of the Project, disturbed lands will be reclaimed concurrently with ongoing mining operations.

Interim reclamation refers to reclamation efforts on lands disturbed during the course of a project which, although not at final reclamation contours, will not be re-disturbed for a significant time period and, therefore, require interim stabilization. The areas most likely to require interim reclamation are road embankments, growth media storage stockpiles, and exploration drill roads and pads.

Final reclamation will be implemented upon the completion of mining activities at the Project. Final, or post-closure, reclamation procedures are discussed in detail in the following section. Section 4.6 discusses the implementation of these procedures for each area of disturbance associated with the project.

Table 4.5-1 lists the facilities and associated disturbances by year. The acreage shown for each year represents reclamation which will be done associated with that facility.

4.5.1 Concurrent Reclamation

Reclamation activities will begin with the stabilization and seeding of the growth media stockpiles during the construction phase of mine, tailings impoundment, and leach pad complex development. Areas no longer needed for mining activities will be available for concurrent reclamation. Concurrent reclamation

**TABLE 4.5-1
RECLAMATION BY YEAR**

Facility	Area Total (Acres)	Year								
		1	2	3	4	5	6	7	8	8+
Pit	176			10	10	10	10	10	10	116
Wasterock Dump*	226		20	20	20	20	20	20	20	86
Topsoil Stockpiles	22	Interim 22								22
Process Facilities	68									68
Tailings Impoundment	131	20								111
Process Ponds	23									23
Leach Pad	199									199
Haul Roads	31									31
Access Road	63	40	23							0
Service Roads	22		10							12
Powerline	9		4							5
Totals	970	82	57	30	30	30	30	30	30	673

*Note: This table includes 226 acres as the area of disturbance for the waste rock dump constructed as per the Complete Benching Alternative and not as per the Proposed Action. Please refer to Section 2.3.1.3 of the Project EIR/EIS.

will involve stabilization and seeding of new or upgraded access road cut and fill slopes, tailings impoundment dikes, solution pond berms, pit and waste rock dump benches, and bare areas around building areas no longer needed. In addition, establishment and monitoring of reclamation test plots at various sites within the Project area will be a concurrent activity. These activities are expected to be ongoing during the life of the operations.

4.5.2 Post-closure Reclamation

Closure and post-closure reclamation activities will commence when the ore body is exhausted and mining has ceased. It is estimated that this terminal phase of reclamation will take one to three years to complete (primarily dependent on the tailings impoundment and heap leach pad closure and reclamation processes) following cessation of mining. Post-closure monitoring (and remedial repair and maintenance, if necessary) of vegetation success, erosion control procedures, and water quality in the ponds is expected to account for an additional one to five years.

4.6 Facilities Closure/Dismantling

4.6.1 Growth Media Stockpiles

After growth media has been removed from the stockpiles for replacement on other sites, the stockpile area surfaces will be loosened, if necessary, to alleviate compaction and seeded with the appropriate seed mix for the area as described in Section 4.4 and shown on Figure 10.

4.6.2 Open Pit

During active mining, reclamation in and around the open pit will be limited to controlling erosion on the haul roads. Upon final mine closure, haul roads in and around the pit will be smoothed of all berms except those necessary for erosion control. Road cut and fill slopes will be gentled as feasible, and the road beds will be ripped and scarified where possible. Prepared seed beds will be established on select upper main benches and some flat areas to the extent possible. The prepared seedbeds will be fertilized and broadcast seeded as described in Section 4.4 and shown on Figure 10. The steep slopes between main benches, the remaining lower benches, and the intermediate benches will be hydraulically seeded. Jeffrey pine seedlings will be planted on selected benches near the top of the pit and in some of the bottom flat areas. Growth media placement and seedling planting will be dictated by the logistics and safety of reaching these areas. Post-reclamation contours are shown on Figure 4.

The pit will encompass 176 acres in final configuration, and, except for temporary accumulation of precipitation (mostly from snowfall), should remain dry. Hydrogeologic studies and site observations

indicate the mineralized areas lie within a low water zone or have been dewatered by previous underground mining activities. The Hydrogeology Report on Site Investigation (DKP 1990f) includes an in-depth analysis of this subject. Upon final cessation of mining, the pit will be surrounded with a berm and posted with appropriate warning signs. Unstable pit highwalls will be brought down with explosives, while those areas which are stable and suitable for raptor nesting will be left in place. Disturbed areas directly around and adjacent to the pit rim will be scarified or ripped as needed, topsoiled, and seeded as described in Section 4.0 and shown on Figure 10. The pit area will be left in a rough, coarse condition wherever possible to promote diversity of topography and to simulate existing and surrounding conditions of the area. Diverse topography will provide niches and micro-environments for plant and animal diversity.

4.6.3 Waste Rock Dump

The waste rock dump will encompass 226 acres and will lie north-northwest of the pit, sloping away from Hayden Hill at an overall slope of 3H:1V. Final contours of the waste rock dump are shown on Figure 4 and a cross section is shown on Figure 5. Waste rock dumps from hard rock mining operations normally are difficult to revegetate under the best of environmental conditions because of general sterility, lack of soil fines, amount and size of rock waste, and slope severity. However, the proposed benching of the dump during placement of the waste rock will enhance reclamation efforts. If waste rock is identified which has a potential to produce acid drainage or toxic pollutants, this waste rock would be handled as described in the Geochemical Sampling and Contingency Plan included in Appendix M of the Final EIR/EIS. Upon final mine closure, the dump top and sides will be contoured to prevent erosion, pooling, ponding or slope failure as described in Section 4.4.3 and Appendix B. Large rock will be strategically placed along the benches and slopes to promote topographic diversity. Stockpiled growth media material will be distributed on the dump top and benches prior to seeding with the proposed seed mixtures as described in Section 4.4 and shown on Figure 10. Jeffrey pine seedlings will be planted on the top and flat bench areas of the dump as shown on Figure 10. Logs will be placed for wildlife habitat as they become available from stripping operations.

4.6.4 Leach Pad Complex

Laboratory tests show that the spent ore material on the pad may be detoxified by washing in place with fresh water at the end of the leach pad life.

Spent ore which has been left on pads or which will be removed from a pad must first be rinsed until:

- Weak Acid Dissociable (WAD) cyanide levels in effluent rinse water are less than 0.2 mg/l;

- The pH level of the effluent rinse water is between 6.0 and 9.0; and
- Contaminants in any effluent from the processed ore which would result from meteoric waters would not degrade surface or ground water.

If the above requirements cannot be achieved, the operator can be granted a variance to those conditions if the operator can demonstrate that:

- The remaining solid material, when representatively sampled, does not contain levels of contaminants that are likely to become mobile and degrade the waters of the State under the conditions that exist at the site; or
- The spent ore is stabilized in such a fashion as to inhibit meteoric waters from migrating through the material and transporting contaminants that have the potential to degrade water.

The CRWQCB permit requirements will take precedence over those listed in this document. Due to the amount of fresh water required, the wash solution from the heap will be detoxified and reused. Detoxing processes and reagents, such as chlorine, peroxide, and sulfur dioxide, will be evaluated prior to closure; however, at this time, it is anticipated that the INCO process and facilities at the mill will be used.

The process water ponds will remain intact until the residual cyanide level in the heap meets the CRWQCB requirements. When this level is achieved, water remaining in the pregnant and barren solution ponds will be detoxified (if necessary) to meet California Waste Discharge Permit stipulations and evaporated by spray irrigation on the heap. Any sediment remaining in the ponds will be analyzed and handled accordingly.

There will be no discharge from the ponds unless authorized by the CRWQCB staff. The pond liners will be left in place following the heap rinsing process for two years or until the CRWQCB approves their removal. At this time, the pond liners will be punctured and buried within the ponds and the ponds modified for sediment control structures. The pond areas will be graded and contoured for surface drainage and reseeded as described in Section 4.4.

The spent heap leach material will be reclaimed in place. The 199-acre heap will be contoured and physically manipulated for stabilization to control drainage and to prevent surface ponding. The slopes of the heap will be pushed out to a slope of 2H:1V. Certain benches will remain. The heap will be covered with a minimum of 12 inches of growth media material prior to seeding and revegetated as described in Section 4.4 and shown on Figure 10. The slopes of the heap will receive a seed mixture specifically designed to quickly stabilize the slopes. The upper flat areas of the heap will be sown to a

mixture which will facilitate grazing as a post-mining land use. Additional closure treatment(s) may be stipulated by the CRWQCB in the Waste Discharge Permit.

The process water remaining after rinsing and detoxifying the heap, which will have been detoxified in preparation for evaporation over the heap, will be available for temporary irrigation of the heap revegetation efforts. The feasibility of preparing and seeding the heap before this water is evaporated will be investigated prior to mine closure. Having irrigation for the vegetation establishment phase of the heap reclamation would help to eliminate the possibility of reclamation failure due to drought or excessive precipitation. If feasible, following investigation, LGMI will submit a written request to the County, BLM, USFS, and CRWQCB for approval.

4.6.5 Tailings Impoundment

The final detailed closure and Reclamation Plan for the 131-acre tailings impoundment will be based on requirements and stipulations of the CRWQCB permit based on input from the BLM and other surface landlords. These stipulations are outlined in Section 4.10.3.

The mill tailings will be continuously detoxed before deposition using the INCO SO₂ process. The anticipated tailings solution WAD cyanide level after the INCO process is 10 ppm or less. Natural degradation in the tailings pond will lower the concentration further. Tailings effluents will be detoxified to 0.2 WAD cyanide. The pH levels must be between 6.0 and 9.0. Measurements are to be made of the effluent at a point where the impoundment discharge waters could/would enter the adjacent environment. Reduction in order constituents such as metals must meet the Federal minimum containment levels (for drinking water) or applicable State requirements.

If the above requirements cannot be achieved, the operator can be granted a variance to those conditions if the operator can demonstrate that:

- The remaining solid material, when representatively sampled, does not contain levels of contaminants that are likely to become mobile and degrade the waters of the State under the conditions that exist at the site; or
- The tailings are stabilized in such a fashion as to inhibit meteoric waters from migrating through the material and transporting contaminants that have the potential to degrade water.

Since the impoundment will be designed and constructed to minimize water pooling, drying should be accomplished in a reasonably short period. Following dewatering and drying, the impoundment will be

contoured and the outboard dike slopes moderated by (but not limited to) pushing freeboard material onto the tailings.

During the contouring phase, the impoundment will be engineered to direct storm water run-off away from the top of the impoundment in an efficient fashion without causing surface erosion. This will be accomplished using riprap channel-armored spillway techniques. Further details on Erosion and sediment control are included in Section 4.4.3, 4.4.4 and, Appendix B.

The small return water pond at the base of the lower impoundment dike will be left in place to collect water from the Leachate Collection and Return System (LCRS) until such time as testing indicates that residual cyanide levels and other stipulated water quality parameters meet the requirements of the CRWQCB. When those levels are obtained, the remaining water in the pond will be disposed of in a manner approved by the CRWQCB staff, and the pond will be reclaimed in the same manner as the heap leach ponds.

The slopes of the tailings impoundment will be revegetated concurrently with construction. The top and any disturbed areas of the slopes of the impoundment will be topsoiled and prepared for seeding at closure. Prior to seeding, measures will be taken to develop an adequate seed bed (dragging, disking, etc. as described in Section 4.4.7. Growth media placement activities usually produce such a seedbed if planting occurs soon after construction is completed. Those areas not conducive to seed germination will be scarified, harrowed, or ripped prior to topsoiling and seeding. Seeding will be done as described in Section 4.4 and shown on Figure 10. The slopes will be seeded with a mixture specially designed for quick stabilization of the soil. The top of the impoundment will be seeded with a mixture prepared for this specific location.

4.6.6 Mill, Crushing, Process Plant, and Building Sites

Buildings and structures (administration, process facility, crusher and mill site, storage and shop facilities, etc.) will be dismantled and removed from the site following final closure. Concrete foundations and any paved areas will be reduced to rubble and buried on site. The remaining disturbances will be ripped and scarified, as needed, smoothed, and contoured, if necessary, for surface drainage control, covered with a minimum of 12 inches of growth media, and reseeded as described in Section 4.4 and shown on Figure 10.

4.6.7 Roads, Fences, Miscellaneous Areas

Following final mine closure, LGMI will consult with the BLM, USFS, and Lassen County Public Works Department to determine whether any site roads and fences on public land will be left intact in the public

interest. Those roads not designated to remain will be blocked to prevent access, graded for drainage, erosion control, and slope stability (cut and fill slopes contoured), scarified or ripped, and reseeded as described in Section 4.4.

Several fencelines will remain following final cessation of mining at Hayden Hill: the overall site boundary fence, plant site security fences, the tailings impoundment fence, and the solution pond fencing. The security fences will be removed when the plant buildings have been dismantled. The tailings impoundment fencing will remain until reclamation has been completed and vegetation has become established to a level which can sustain wildlife use. Fencing around the solution ponds and the wildlife protective netting will be removed after cyanide levels have been tested and shown to be within the Waste Discharge Requirement stipulations. The future of the site boundary fence will be based upon discussions with the BLM, USFS, and the Lassen County Planning Department. Since this fence will be stock proof, there may be merit in leaving it in place until revegetated areas have become established well enough to withstand moderate grazing pressure.

Miscellaneous areas include (but are not limited to) such small sites as pumping stations and electrical substations scheduled for removal. These sites will be treated and reclaimed in the same fashion as building sites and as described in Section 4.4.

Pipelines will be removed only after consultation with the BLM, USFS, and Lassen County. Based on these consultations, all or portions of these facilities will be removed. The power supply line for the site will be removed from the site to the junction of County Road A2 and Highway 139. The disturbances associated with the removal of these utilities will be reclaimed as described in Section 4.4.

4.7 Post-reclamation Topography

The post-reclamation contouring for the site has been designed for the control of erosion and sediment, with the post-mining land use in mind. Wildlife habitat areas such as the waste rock dump and pit areas will be contoured for topographical diversity and cover. Certain areas will be modified for raptor nest sites as possible. The lower flat areas which will be reclaimed as grazing areas will be contoured for pasture land. The post-reclamation topography is shown on Figure 4. The mining, waste rock deposition, heap leach ore placement, and tailings deposition will be accomplished to minimize the amount of post-mining re-contouring required to meet the individual area needs. This can be accomplished with a high level of efficiency since detailed drainage control and post-mining contours have been designed at this time. Section 4.4.3 contains a detailed description of the drainage of the site.

4.8 Wetlands

The majority of the wetland areas that will be disturbed will be altered to a final configuration that is not conducive to the reconstruction of riparian habitat. For this reason the dredge and fill permit, prepared for the Corps of Engineers includes the mitigation of lost wetlands with a constructed, seasonally inundated wetland area. The replacement of lost wetlands to created wetlands will be at a ratio of 3:1. The new wetlands will be of higher value to wildlife and water quality protection than those existing. The details of the mitigation plan can be seen in Appendix I of the Final EIR/EIS. Wetland soils will be stockpiled separately and used in the wetland mitigation area to retain the seed source they contain.

4.9 Reclamation Success Evaluation

Reclamation in the arid (evaporation exceeds precipitation) Montane zone in northeastern California can be difficult, particularly during years of below normal precipitation. Restoration, or nearly exact replacement of the natural communities, simply cannot be accomplished on open-pit mine disturbances within a reasonable time frame in a cost-efficient fashion. However, by preserving growth media materials, using appropriate engineering practices to stabilize disturbed areas, preparing seed beds which invite and promote natural colonization, and using plant species and amendments with proven track records, reclamation success can be expected at Hayden Hill. A method for evaluating the success of the vegetation is presented below. The mitigation compliance plan included in the final EIR/EIS will be followed.

It is LGMI's intent to adhere to this general philosophy in planning and implementing reclamation at the Hayden Hill Project site. The intent of the reclamation program for the Project is to reclaim mining related disturbance, where conditions and current reclamation technology reasonably permit, to protect public health, safety, and welfare, to conserve natural resources, to aid in the protection of wildlife, domestic animals and aquatic resources, and to reduce soil erosion. Reclamation goals for the various Project areas and components (pit and waste rock dump, crusher area/plant site complex, tailings impoundment, leach pad complex, haul roads, and ancillary areas) are: 1) protection of ground and surface water resources; 2) removal and salvage of buildings and process structures; 3) stabilization of soils and control of wind and water erosion; 4) stabilization, contouring, and leveling of slopes as much as practical and feasible; and, 5) establishment of vegetation, indigenous and introduced, through promotion of natural invasion and succession as well as through seeding efforts to promote stable plant communities. The overall goal will be to return areas which are currently wildlife habitat to wildlife habitat and areas which are currently grazing to grazing. The reclamation success evaluation is oriented toward evaluating the success of achieving these goals. The intent of the reclamation success evaluation is to determine if the goals stated above have been achieved. The bond money for the Project will be

released sequentially when the success criteria stated in this document are achieved for each reclaimed unit.

4.9.1 Reclamation Schedule

The success evaluation monitoring program will begin at the Project one year following the first completed unit of reclamation. Concurrent reclamation will be done in the first year of operations in various areas, such as the tailings embankment slopes and access road cut slopes. Therefore, the monitoring program will begin in the second year of mine operations. The monitoring program will continue for five years following mine closure or until all reclaimed areas have passed the bond release criteria.

Climatological data collection will be an integral part of the success evaluation and, therefore, of the monitoring plan. This data is being collected now and will continue to be collected until mine closure.

The quality of the water leaving the Project via the sedimentation pond located in Preston Canyon will be monitored in compliance with the NPDES permit. Water quality monitoring began during the early permitting process to gather background data. This monitoring will continue at the frequencies required by the CRWQCB until permit release. It is anticipated the NPDES permit release will be between two and five years following Project closure. The NPDES permit cannot be terminated until the water quality can be shown to meet the requirements of the permit with no additional treatment. The specific requirements of the NPDES permit will be determined by the CRWQCB at the time of issuance and will be site specific. Therefore, any requirements discussed in this document are minimum levels. The CRWQCB requirements will take precedence over those presented here. The permit will have requirements which address suspended solids, pH and metals content. These parameters will address sedimentation, metals mobilization and ARD concerns at the site.

4.9.2 Evaluation Approach/Technique

As stated above, the intent of the reclamation success evaluation is to determine if ground and surface water leaving the site is protected from erosion and pollutants and to determine if the vegetation is sufficiently established to accomplish this and on track to a suitable vegetation type. The methods described below are designed to monitor the success of the reclamation efforts towards these goals.

4.9.2.1 Vegetation

The success of the reclamation will be determined by monitoring vegetation parameters such as cover, density, and species richness and comparing these values to curves developed for each vegetation type.

TABLE 4.9-1
QUALITATIVE DESCRIPTIONS OF SOIL SURFACE STATUS

SOIL SURFACE STATUS DESCRIPTORS

(From: Range Management, Stoddard, Smith, and Box, 1975)

- CLASS 1:** No soil loss or erosion; top soil layer intact, well-dispersed accumulation of litter from past year's growth plus smaller amounts of older litter.
- CLASS 2:** Soil movement slight and difficult to recognize; small deposits of soil in form of fans or cones at end of small gullies or rills, or as accumulations back of plant crowns or behind litter, litter not well dispersed or no accumulation from past year's growth obvious.
- CLASS 3:** Soil movement or loss more noticeable; topsoil loss evident, may be some pedestaled or hummocked plants; rill marks evident, poorly dispersed litter and bare spots not protected by litter.
- CLASS 4:** Soil movement and loss readily recognizable; topsoil remnants with vertical sides and exposed plant roots, roots frequently exposed, litter in relatively small amounts and washed into erosion protected patches.
- CLASS 5:** Advanced erosion; active gullies, steep sidewalls on active gullies; well-developed erosion pavement on gravelly soils, litter mostly washed away.

The curves will be developed by monitoring areas of similar vegetation that were disturbed at known time intervals in the past. The cover, density, and species richness data will be plotted against time. This will produce a curve that represents the transition from newly revegetated land to a specific vegetation type as determined by cover, density, and species richness. Curves will be developed for each vegetation type. The comparison areas will be determined and agreed upon with the lead agencies within the first year of operations.

The monitoring technique will be similar for all vegetation types to be reclaimed. Observations will be made of each area prepared and seeded as a unit. For example, if the entire waste rock dump were prepared and seeded at one time, the success of the reclamation would be determined based on one set of observations for the whole dump. In reality, the waste rock dump will be reclaimed bench by bench as deposition moves down the slope, and observations will be made for each bench individually. Plots for herbaceous cover observations will be 20 centimeters (cm) by 50 cm. Plots for shrub and tree observations will be belt transects not less than 16 square meters (m²) for shrub, and 100 m² for tree species. The initial sample size for the cover evaluation will be 20 quadrats per reclaimed unit. The sample size for species richness will be determined statistically, by the use of species area curves, during the observations. Density of woody species will be measured within the belt transects used for species richness. Sample sizes will be modified after analysis, with approval by the County, to ensure adequate sample size to meet the established precision level of 80% plus or minus 20%. The methods used for cover, density, and species richness will be consistent with those stated in Daubenmire (1959), and Mueller-Dombois and Ellenberg (1974), or an equivalent method. Observations will be completed for each reclaimed unit once each year, during an appropriate plant development stage so that plant identification is possible. The observations will be done at approximately the same time each year. Observations of an individual unit will continue until the requirements for success are reached or exceeded.

Photographic points will be established to document vegetation dynamics.

The sloped areas of the pit and waste rock dump which have a south, southeast, or southwest aspect will be reclaimed as Upland Shrub vegetation (Seed Mix 4). These areas will be compared to the cover, density, and species richness curves developed from past Upland Shrub disturbances. The flat areas and northern aspects of the pit and waste rock dump will be reclaimed to and compared with transition curves developed from past Jeffrey Pine/Mountain Shrub disturbances (Seed Mix 3). The remaining areas, including the tailings, heap leach pad, and facilities areas, will be reclaimed as grazing land and compared to existing pasture values of cover and species. The goal will be to reach 80 percent, plus or minus 20 percent, of the existing vegetation or of the transition curve values for the time period being evaluated.

The observations will continue each year until the area meets or exceeds the target values. Areas where the first revegetation attempt does not meet the values listed below will be investigated for the reason of failure, the problems rectified, and the area re-seeded. Observations of failed areas will be noted and recorded as such. Problem areas will be handled on a case-by-case basis according to the Mitigation Compliance Plan. The comparison areas will be agreed to by the lead agencies during the first year of operations.

4.9.2.2 Soil Erosion

LGMI will implement the elements of the Reclamation Plan, including the soil erosion and sediment control plan discussed in Section 4.4.3 to control the stability of soil, reduce run-off, and conserve soil. The following paragraph discusses the methodology used to monitor the success of these measures.

Soil erosion will be estimated for each reclaimed unit using the qualitative descriptors listed in Table 4.9-1. A technician will observe the reclaimed unit and assign one of the listed qualitative descriptors to the unit as a whole. The designations will be completed at the same time, and frequency, the vegetative observations are being made. The results will be used to aid in determining the cause of any failures which are encountered and to locate problem areas before erosion becomes widespread enough to affect water quality.

4.9.2.3 Water Quality Protection

Surface, ground, and vadose zone (the area immediately above the groundwater level) water will be monitored as required by the NPDES and waste discharge requirements issued by the CRWQCB. The type, frequency, parameters, and duration of the studies will be established in these documents.

4.10 Performance Standards and Remedial Measures

4.10.1 Vegetative Standards

The goals for cover, density, and species richness will be based on reaching a percentage of a comparison area value or a transition curve point for a given parameter. For direct comparison areas, the goals vary by year to allow establishment of the vegetation. Cover will be observed for herbaceous vegetation only. Density will be observed only in those areas where Seed Mix numbers 3 and 4 are used. Species richness will include only those perennial species comprising greater than 3 percent cover. Observations will continue until all areas are accepted for bond release.

<u>PARAMETER</u>	<u>1 YEAR GOAL</u>	<u>5 YEAR GOAL</u>
Cover (% of control) - herbaceous species only	10%	80%
Density (% of control) - woody species only	5%	60%
Species richness (% of control) - perennial species comprising > 3% cover only	5%	60%

If a reclaimed area does not meet the goals or does not appear to be nearing the goals, LGMI will investigate the reasons for failure. If warranted, the area will be fertilized, irrigated, reseeded, or otherwise corrected in order to achieve successful reclamation.

4.10.2 Soil Protection Standards

Any area within a reclaimed unit larger than 10 meters by 10 meters receiving an evaluation score (Table 4.9-1) of Class 2 or higher which persists more than two years will be investigated. Areas receiving a score of Class 3 or higher will receive treatment to correct the erosion. If vegetative cover is inadequate, the area will be re-prepared and revegetated. Any obvious reasons for the failure will be noted and rectified. The climatic data for the time period involved will also be consulted to make a determination on the cause of the failure.

4.10.3 Water Quality Standards

The performance standards for water quality will be determined by the CRWQCB when the NPDES permit and waste discharge requirements are issued. Appendix B discusses the acceptable standards that will be allowed by the CRWQCB at closure in more depth. The actual permit requirements are anticipated to be equal or more stringent than these.

- Any liquid leaving the heap leach, tailings or process area will be at or below 0.2 mg/kg weak acid dissociable (WAD) cyanide. If this criteria is not met, detoxification will continue.
- The solids in the tailings and heap will be at or below 0.5 mg per kilogram (mg/kg) spent ore WAD cyanide. If this criteria is not met, detoxification will continue.
- The heap will be sampled after closure by drilling random borings and sampling heap material as required. The samples will be analyzed for the above criteria and static acid base accounting tests will be run on each sample. If these criteria are not met, detoxification will continue.

- The tailings will be sampled in a similar fashion, although, the sample frequency may be less due to the consistency of the deposit. If the criteria for the tailings are not met, detoxification will continue.
- Receiving waters, below any discharges to surface waters, will be at or below the Environmental Protection Agency's (EPA) four day average, fresh water aquatic life, protection criteria of 5.2 micrograms per liter cyanide. If this criteria is not met, LGMI will work with the CRWQCB to identify the cause and appropriate actions will be taken.
- Run-off from the waste rock dump will be sampled following Project closure for heavy metals, acid base accounting, erosion, and sediment loading. The sampling for run-off from the dump will be controlled by the NPDES permit. Sampling of groundwater will be controlled by the waste discharge requirements. If the permit and requirement criteria are not met, LGMI will work with the CRWQCB to identify the cause and appropriate actions will be taken.

4.11 Management of Reclaimed Areas

Reclaimed areas will be managed by excluding all unnecessary traffic and personnel, implementing practices to manage grazing by domestic animals, and undertaking a monitoring program to determine reclamation success. Personnel will be excluded by fencing, signs, and/or communication and education of the reclamation program. Livestock will be controlled by fencing until reclamation is proven successful. At this time, grazing management will be determined by the property owner. Monitoring to determine reclamation success will continue as described above until an area is proven successful.

4.12 Research

Development of the research program will begin following project approval. The first item of research will be to identify suitable comparison areas for the success evaluation and transition curve data acquisition. The next step will be to evaluate these areas and produce the transition curves for Upland Shrub and Jeffrey Pine/Mountain Shrub vegetation. The curves will be modified as additional research is done.

In addition to the above research, site-specific reclamation trials will be conducted to test and further refine the proposed treatments, fertilization rates and seed mixes. Vegetation communities which have extensively colonized the Fischer-Watt leach pad since 1986 will be analyzed in an effort to promote similar colonization and succession on the Hayden Hill leach pad. Other items of research will include analyses geared toward using the tailings pond to model a duripan soil and produce a Low sagebrush

community type, and on-site tests to determine the effectiveness of polyacrylamides. A detailed experimental design will be developed within one year of the beginning of operations and will be reviewed by the lead State and Federal agencies.

4.13 Monitoring Program

The monitoring program will be an integral part of the Mitigation Compliance Program which is addressed in Appendix D of the Final EIR/EIS. At a minimum, an annual report summarizing the findings of the monitoring program will be submitted to the BLM, USFS, and Lassen County. The report will include the acreage disturbed and reclaimed to date, as well as acreage to be disturbed and reclaimed.

4.14 Financial Assurances

4.14.1 Derivation of Unit Costs

Unit costs for the reclamation cost estimate were derived from two primary information sources: (1) published cost data and (2) historical reclamation cost data. Table 4.14-1 provides a summary of the derivation of unit costs for the various reclamation activities.

The published cost data included information developed primarily from cost estimating manuals, as well as other sources including cost data from the U.S. Bureau of Reclamation and SRK construction projects. All costs not in 1991 dollars were adjusted using a factor of 2.7% per year (December 1990 Construction Cost Index = 2.7%). Multiple costs for identical reclamation activities were averaged.

The historical cost data included actual project cost data for reclamation activities conducted by Amax Resource Conservation Company (ARCC), as well as reclamation cost estimate data from ARCC and SRK projects. All costs not in 1991 dollars were adjusted using a factor of 2.7% per year. All costs were averaged for identical reclamation activities. Unit costs for each reclamation activity were calculated by averaging the published unit costs with historical unit costs with an equal degree of weighting. The overhead and profit margin (O&P) was established as 10% of the unit bare costs.

4.14.2 Calculation of Project Facilities Reclamation Costs

4.14.2.1 Roadways

A total disturbance of 54 acres was estimated for all temporary access roads and haul roads. This disturbance area does not include the Preston Canyon Corridor, Bunselmeir Corridor, and the Hayden

RECLAMATION ACTIVITY (All locations and facilities)		UNIT	PUBLISHED COST DATA (1)		HISTORICAL COST DATA (2)		RECLAMATION COST (3)		COMMENTS
			UNIT BARE		UNIT BARE		UNIT BARE	COST O&P (4)	
RECLAMATION EARTHWORKS									
Contour, rough grade, and/or scarify to relieve topsoil placement.		AC		\$997		\$1,590	\$1,294	\$129	
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.		AC		\$2,480		\$1,890	\$2,185	\$219	* assumes average haul distance of between 2,000 and 3,000 feet
Riprap placement		SY		\$10.80		---	\$10.80	\$1.08	18 inch layer thickness
REVEGETATION									
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.		AC		\$652		\$928	\$790	\$79	
Hydro- seed, mulch, fertilize.		AC		\$1,430		---	\$1,430	\$143	
Plant Jeffrey Pine seedlings		AC		\$320		---	\$320	\$32	USFS nursery cost of \$118/1000 trees
DISMANTLING, DEMOLITION, AND REMOVAL									
Liners removed and disposed off site.		AC		\$8,276		---	\$8,276	\$828	
Concrete, reinforced.		SY		\$11.37		---	\$11.37	\$1.14	
Concrete disposal, on-site									
Grout seal pipes.		LS		\$550		---	\$550	\$55	
Buildings, structures, equipment, pipelines, utilities, fencing, etc.		LS		NC		---	NC	NC	dismantling and removal cost is equivalent to salvage value
MONITORING		YR		\$25,000		---	\$25,000	\$2,500	assumes 1/2 man year each year

NOTES:

(1) References:

Means, R. S. (1991). Means Heavy Construction Cost Data, R.S. Means Co., Inc. Kingston, MA.
Dodge Cost Systems (1988). Dodge Heavy Construction Cost Data, Mc Graw Hill, Princeton, NJ.

Sources:

USBR cost data, SRK construction project data

(2) Sources:

Amaz Resource Conservation Company, SRK reclamation project data

(3) Based on equal weighting of published and historical cost data.

(4) Assumes 10% overhead and profit margin.

KEY TO ABBREVIATIONS:

AC = Acre
LS = Lump Sum
NC = No Cost
SY = Square Yard
YR = Year
O&P = Overhead & Profit

TABLE 4.14-1 RECLAMATION COST ESTIMATE

LOCATION/FACILITY: ROADWAYS								
RECLAMATION ACTIVITY	UNIT	UNIT		COST O&P	QUANTITY	COST		TOTAL
		BARE	O&P			BARE	EXTENSION O&P	
RECLAMATION EARTHWORKS								
Contour, rough grade, and/or scarify to receive topsoil placement.	AC	\$1,294		\$129	54	\$69,876	\$6,966	\$76,842
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.	AC	\$2,185		\$219	54	\$117,990	\$11,826	\$129,816
REVEGETATION								
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.	AC	\$790		\$79	54	\$42,660	\$4,266	\$46,926
LOCATION/FACILITY TOTAL =						\$230,526	\$23,058	\$253,584

TABLE 4.14-1 (continued)

LOCATION/FACILITY: OPEN PIT									
RECLAMATION ACTIVITY	UNIT	UNIT		COST	QUANTITY	COST		EXTENSION	TOTAL
		BARE	O&P			BARE	O&P		
RECLAMATION EARTHWORKS									
Contour, rough grade, and/or scarify to receive topsoil placement. (Flats)	AC	\$1,294		\$129	88	\$113,872		\$11,352	\$125,224
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer. (Flats)	AC	\$2,185		\$219	88	\$192,280		\$19,272	\$211,552
REVEGETATION									
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped. (Flats)	AC	\$790		\$79	88	\$69,520		\$6,952	\$76,472
Hydro- seed, mulch, fertilize. (Slopes)	AC	\$1,430		\$143	113	\$161,590		\$16,159	\$177,749
Plant Jeffery Pine seedlings.	AC	\$320		\$32	29	\$9,280		\$928	\$10,208
LOCATION/FACILITY TOTAL =						\$546,542		\$54,663	\$601,205

TABLE 4.14-1 (continued)

LOCATION/FACILITY: WASTE ROCK DUMP								
RECLAMATION ACTIVITY	UNIT	UNIT		COST O&P	QUANTITY	COST		TOTAL
		BARE	O&P			BARE	EXTENSION O&P	
RECLAMATION EARTHWORKS								
Contour, rough grade, and/or scarify to receive topsoil placement. (Crests)	AC	\$1,294		\$129	53	\$68,582	\$6,837	\$75,419
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer. (Flats)	AC	\$2,185		\$219	105	\$229,425	\$22,995	\$252,420
REVEGETATION								
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped. (Flats)	AC	\$790		\$79	105	\$82,950	\$8,295	\$91,245
Hydro- seed, mulch, fertilize. (Slopes)	AC	\$1,430		\$143	125	\$178,750	\$17,875	\$196,625
Plant Jeffrey Pine seedlings. (Flats)	AC	\$320		\$32	105	\$33,600	\$3,360	\$36,960
LOCATION/FACILITY TOTAL =						\$593,307	\$59,362	\$652,669

TABLE 4.14-1 (continued)

LOCATION/FACILITY: HEAP LEACH								
RECLAMATION ACTIVITY	UNIT	UNIT		COST O&P	QUANTITY	COST		TOTAL
		BARE	O&P			BARE	EXTENSION O&P	
RECLAMATION EARTHWORKS								
Detoxification/rinsing.	LS	\$1,185,000	----		1	\$1,185,000	\$0	\$1,185,000
Contour, rough grade, and/or scarify to receive topsoil placement.	AC	\$1,294	\$129		206	\$266,564	\$26,574	\$293,138
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.	AC	\$2,185	\$219		206	\$450,110	\$45,114	\$495,224
Riprap placement. (Spillway)	SY	\$10.80	\$1.08		1000	\$10,800	\$1,080	\$11,880
REVEGETATION								
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped. (Flats)	AC	\$790	\$79		133	\$105,070	\$10,507	\$115,577
Hydro- seed, mulch, fertilize. (Slopes)	AC	\$1,430	\$143		73	\$104,390	\$10,439	\$114,829
LOCATION/FACILITY TOTAL =						\$2,121,934	\$93,714	\$2,215,648

TABLE 4.14-1 (continued)

LOCATION/FACILITY: LINED POND FACILITIES & DITCHES									
RECLAMATION ACTIVITY	UNIT	UNIT		COST O&P	QUANTITY	COST		EXTENSION O&P	TOTAL
		BARE	O&P			BARE	O&P		
RECLAMATION EARTHWORKS									
Contour, rough grade, and/or scarify to receive topsoil placement.	AC	\$1,294		\$129	10	\$12,940	\$1,290		\$14,230
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.	AC	\$2,185		\$219	10	\$21,850	\$2,190		\$24,040
Riprap placement (Spillways & ditches)	SY	\$10.80		\$1.08	5750	\$62,100	\$6,210		\$68,310
REVEGETATION									
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.	AC	\$790		\$79	10	\$7,900	\$790		\$8,690
DISMANTLING, DEMOLITION, AND REMOVAL									
Liners punctured & folded.	AC	\$8,276		\$828	11	\$91,036	\$9,108		\$100,144
Grout seal pipes.	LS	\$550		\$55	1	\$550	\$55		\$605
LOCATION/FACILITY TOTAL =						\$196,376	\$19,643		\$216,019

TABLE 4.14-1 (continued)

LOCATION/FACILITY: TAILINGS IMPOUNDMENT											
RECLAMATION ACTIVITY	UNIT	UNIT		COST	O&P	QUANTITY	COST		EXTENSION	TOTAL	
		BARE					BARE				
RECLAMATION EARTHWORKS											
Contour, rough grade, and/or scarify to receive topsoil placement.	AC		\$1,294		\$129	135		\$174,690		\$17,415	\$192,105
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.	AC		\$2,185		\$219	135		\$294,975		\$29,565	\$324,540
Riprap placement (Spillway)	SY		\$10.80		\$1.08	4000		\$43,200		\$4,320	\$47,520
REVEGETATION											
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.	AC		\$790		\$79	92		\$72,680		\$7,268	\$79,948
Hydro- seed, mulch, fertilize.(Slopes)	AC		\$1,430		\$143	43		\$61,490		\$6,149	\$67,639
DISMANTLING, DEMOLITION, AND REMOVAL											
Grout seal pipes.			\$550		\$55	1		\$550		\$55	\$605
LOCATION/FACILITY TOTAL =								\$647,585		\$64,772	\$712,357

TABLE 4.14-1 (continued)

LOCATION/FACILITY: TOPSOIL STOCKPILES										
RECLAMATION ACTIVITY	UNIT	UNIT		COST	O&P	QUANTITY	COST		EXTENSION	TOTAL
		BARE					BARE			
								O&P		
REVEGETATION										
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.	AC		\$790		\$79	22	\$17,380		\$1,738	\$19,118
LOCATION/FACILITY TOTAL =							\$17,380		\$1,738	\$19,118

TABLE 4.14-1 (continued)

LOCATION/FACILITY: BUILDINGS, STRUCTURES, EQUIPMENT, ETC.									
RECLAMATION ACTIVITY	UNIT	UNIT		COST	O&P	QUANTITY	COST		TOTAL
		BARE	O&P				BARE	EXTENSION	
								O&P	
RECLAMATION EARTHWORKS									
Contour, rough grade, and/or scarify to receive topsoil placement.	AC	\$1,294		\$129		68	\$87,992	\$8,772	\$96,764
Excavate topsoil from stockpile, place into trucks, haul and dump, spread topsoil by dozer.	AC	\$2,185		\$219		68	\$148,580	\$14,892	\$163,472
REVEGETATION									
Till topsoil with disk harrow, fertilize with tractor spreader, tractor (drill) seeding, straw mulch, crimped.	AC	\$790		\$79		68	\$53,720	\$5,372	\$59,092
DISMANTLING, DEMOLITION, AND REMOVAL									
Concrete, reinforced.									
Concrete disposal, on-site	SY	\$11.37		\$1.14		15000	\$170,550	\$17,100	\$187,650
Buildings, structures, equipment, pipelines, utilities, fencing, etc.	LS	NC	NC			1	\$0	\$0	
LOCATION/FACILITY TOTAL =							\$460,842	\$46,136	\$506,978

TABLE 4.14-1 (continued)

1991 RECLAMATION COST ESTIMATE SUMMARY			
LOCATION / FACILITY	RECLAMATION		COST
	BARE	O&P	TOTAL
ROADWAYS	\$230,526	\$23,058	\$253,584
OPEN PIT	\$546,542	\$54,663	\$601,205
WASTE ROCK DUMP	\$593,307	\$59,362	\$652,669
HEAP LEACH	\$2,121,934	\$93,714	\$2,215,648
LINED PONDS	\$196,376	\$19,643	\$216,019
TAILINGS IMPOUNDMENT	\$647,585	\$64,772	\$712,357
TOPSOIL STOCKPILES	\$17,380	\$1,738	\$19,118
BUILDINGS & STRUCTURES	\$460,842	\$46,136	\$506,978
MONITORING	\$125,000	\$1,250	\$126,250
PROJECT SUB-TOTAL	\$4,939,492	\$364,336	\$5,303,828
MOBILIZATION/DEMOBILIZATION	\$50,000	\$5,000	\$55,000
CONTINGENCY (10%)	\$498,949	\$36,934	\$535,883
PROJECT TOTAL	\$5,488,441	\$406,270	\$5,894,711
PROJECT TOTAL PER ACRE	\$5,658	\$419	\$6,077

TABLE 4.14-1 (continued)

Hill Road which are intended not to be reclaimed. The reclamation costs for roadways are presented in Table 4.14-1. The total estimated costs for reclaiming roadways is \$253,584.

4.14.2.2 Open Pit

Table 4.14-1 provides a breakdown of reclamation costs for the Lookout and Providence pit areas combined. Disturbance areas for flats and slopes were estimated from the total disturbance area of the facility. The total cost for the pit reclamation is \$590,997.

4.14.2.3 Waste Rock Dump

Table 4.14-1 provides a breakdown of reclamation costs associated with the waste rock dump facility. The reclamation cost includes the planting of Jeffrey pine seedlings at a density of 150 trees per acre on all flat areas of the waste rock facility. The total cost for reclaiming the waste rock dump is \$652,669.

4.14.2.4 Heap Leach

The reclamation cost for the heap leach facility includes the expense for heap detoxification as calculated by LGMI. The basis for the expense associated with heap detoxification includes:

- Three replacements of the heap capillary (pore) solution;
- 36 million tons of spent ore;
- Capillary solution 8% by weight; and
- INCO costs based on mill tails.

The total cost for reclaiming the heap leach facility is \$2,215,648, as presented in Table 4.14-1.

4.14.2.5 Lined Pond Facilities

The total cost for reclamation of the lined pond and ditch facilities is \$117,459, as presented in Table 4.14-1.

4.14.2.6 Tailings Impoundment

The total cost for reclaiming the tailings impoundment facility is \$712,327, as presented in Table 4.14-1. This reclamation cost includes 1 year of post-closure solution management as estimated by LGMI.

4.14.2.7 Growth Media Stockpiles

The total cost for reclamation of the growth media stockpiles is \$19,119, as presented in Table 4.14-1.

4.14.2.8 Buildings, Structures, Equipment, etc.

Reclamation earthworks and revegetation for the primary mine facilities (i.e., mill and ancillary facilities area) plus the crusher area are included in this division. The cost for dismantling and removal of buildings, structures, equipment, pipelines, utilities, fencing, etc. are considered equivalent, if not excess, to the salvage value of the facilities and equipment. The total cost for reclamation work associated with this division is \$506,978, as tabulated in Table 4.14-1.

4.14.2.9 Monitoring

The cost for reclamation monitoring has been estimated by assuming 5 years of post-closure monitoring, requiring one half of a man year, per year, at a rate of \$20 per hour plus expenses.

4.14.2.10 Reclamation Cost Estimate

The summation of individual facility costs is equivalent to the subtotal Project reclamation cost. A contingency of 10 percent was added to cover intangible items not directly accountable. Estimated mobilization and demobilization costs were also accounted for in the reclamation cost estimate. The total Project reclamation cost, plus contingency and mobilization, is \$5,894,711.00. The costs estimated for the bond represent the point of maximum disturbance and are sufficient to cover the costs to close and reclaim the site if it is closed at any time during operation. Bonding costs will be re-examined at the request of the operator and/or the lead agency, if the scope of the Project or technology changes substantially.

4.14.3 Establishment

LGMI will allocate funds to an insurance company to post a surety bond. The surety bond will be in the name of Lassen County, the State Geologist and the BLM unless the MOU with the County specifically addresses BLM concurrence before bond release.

4.14.4 Interagency Memorandum of Understanding

An interagency Memorandum of Understanding, between the County, State Geologist, BLM, USFS, and CRWQCB will be used to establish the County as the bond holder and for release of the financial surety

for the Project. The surety will be in the name of Lassen County and the State Geologist. An agency reclamation review committee may be established.

4.14.5 Release Criteria

Ultimately, the bond will be released when the NPDES and waste discharge requirements issued by the CRWQCB and the success evaluation performance standards are met. Should the CRWQCB require standards different from those contained in this document, their standards will take precedence. Listed below are the requirements which, when met, will signal the release of the bond.

A stable vegetative cover capable of self-regeneration and ecological succession without continued dependence on irrigation, soil amendments or fertilizer will be established. Three parameters will be observed and compared to similar undisturbed areas or transition curves to determine the success of the revegetation. At least two years of self-sufficiency will be shown for each reclaimed area. During these two years, no human intervention will be allowed, including irrigation, fertilization, or weeding. Cattle grazing will not be accepted as a valid reason for vegetation failure.

The goals for cover, density, and species richness will be based on reaching a percentage of a comparison area or transition curve point. The values which will be met for financial surety release are listed below.

<u>PARAMETER</u>	<u>1 YEAR</u>	<u>5 YEAR</u>
Cover (% of control) - Cover observed for herbaceous vegetation only.	10%	80%
Species richness (% of control) - Perennial species comprising > 3% cover.	5%	60%
Density (% of control) - Density observed where Seed Mix 3 or 4 is used only.	5%	60%

The process solutions at the Project will be detoxified and used to rinse and detoxify the heap during Project closure. The criteria for the rinse water, heap material, and sampling will be set by the CRWQCB at the time the waste discharge requirements are issued. However, the following projected limits for these parameters are expected to be included in the CRWQCB requirements and will be met

or exceeded by the Project. In any case, the CRWQCB requirements will take precedence over those criteria stated here.

- Any liquid leaving the heap leach, tailings or process area will be at or below 0.5 mg/l weak acid dissociable (WAD) cyanide.
- The solids in the tailings and heap will be at or below 0.5 mg per kilogram (mg/kg) spent ore WAD cyanide.
- The heap will be sampled after closure by drilling random borings and sampling heap material as required. Samples will be taken from each boring at 25 foot intervals to within five feet of the liner surface. The samples will be analyzed for the above criteria and static acid base accounting tests will be run on each sample.
- The tailings will be sampled in a similar fashion, although, the sample frequency may be less due to the consistency of the deposit.
- Receiving waters below any discharges to surface waters will be at or below the Environmental Protection Agency's (EPA) four day average, fresh water aquatic life, protection criteria of 5.2 micrograms per liter cyanide.
- Run-off from the waste rock dump will be sampled, following Project closure, for heavy metals, acid base accounting, erosion and sediment loading. The sampling for the dump will be controlled by the NPDES permit.

For soil erosion, the bond release criteria will be that no areas larger than 10 m by 10 m receive a qualitative descriptor estimation of 3 or more.

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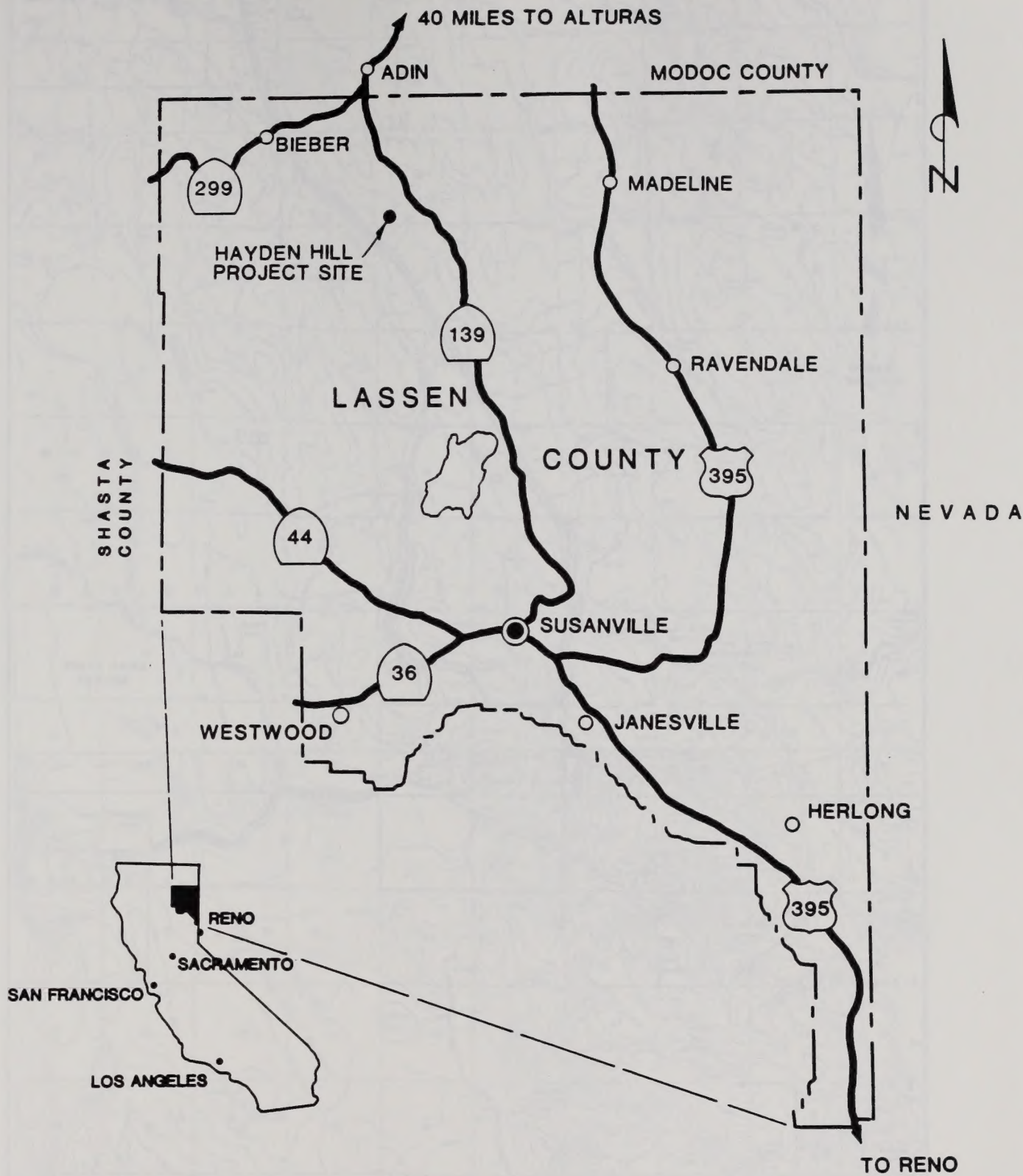
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PROJECT NO.

29001

DATE

7/91

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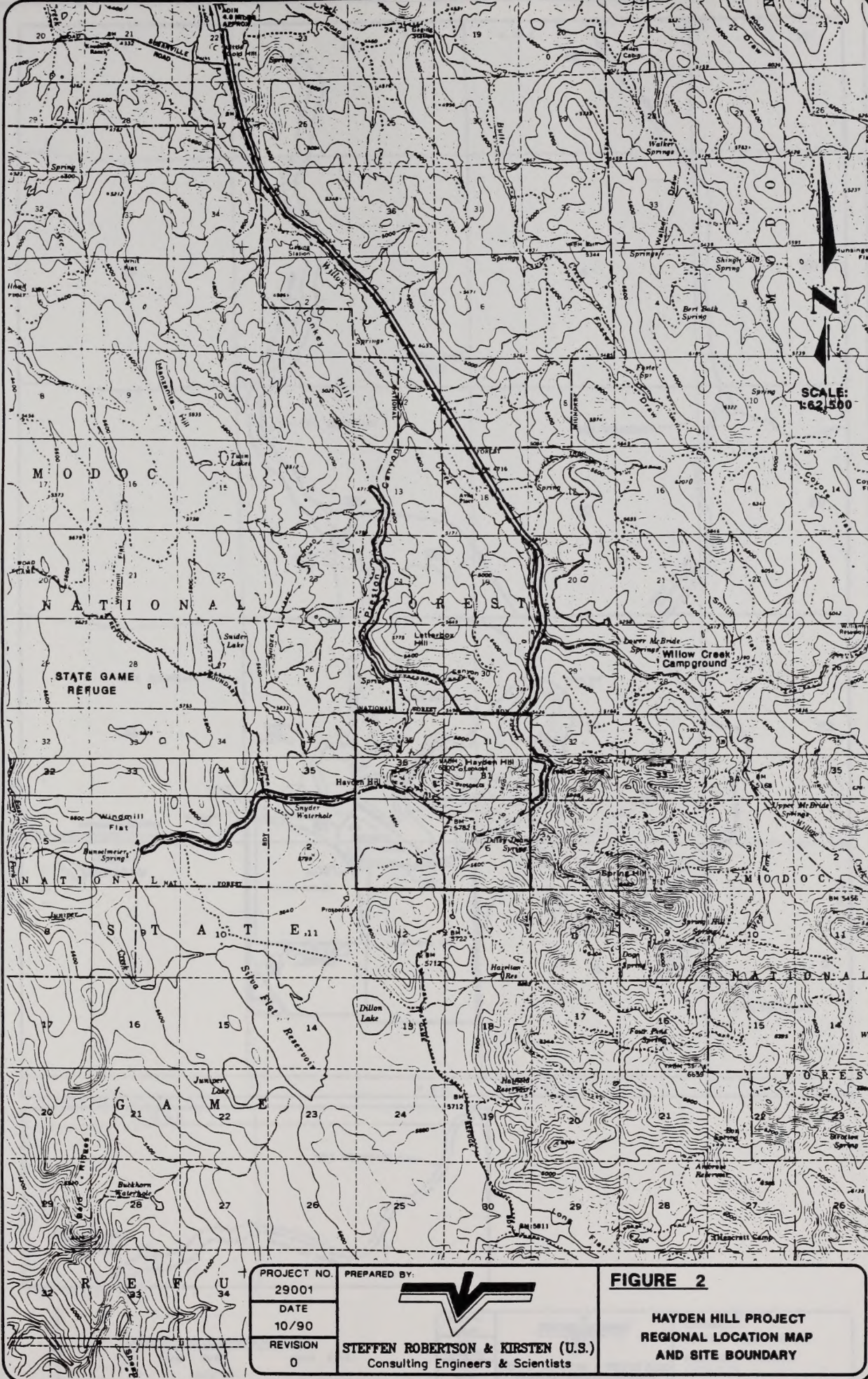


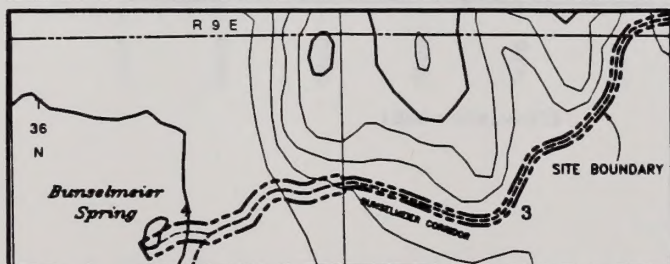
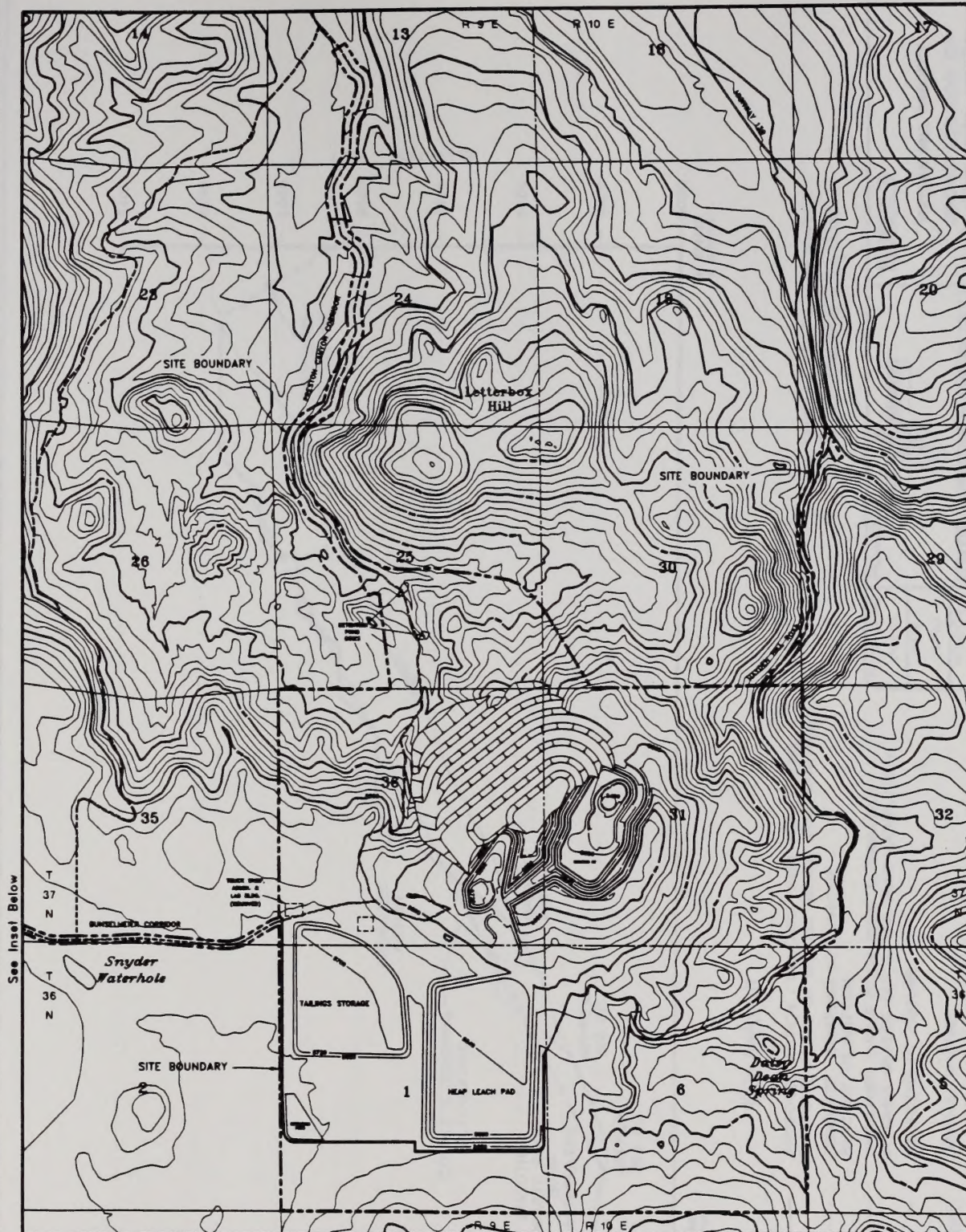
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FIGURE 1

**HAYDEN HILL PROJECT
LOCATION MAP**





CONTOUR INTERVAL = 40 FT.

0 1000 2000 4000 Feet

1:24000

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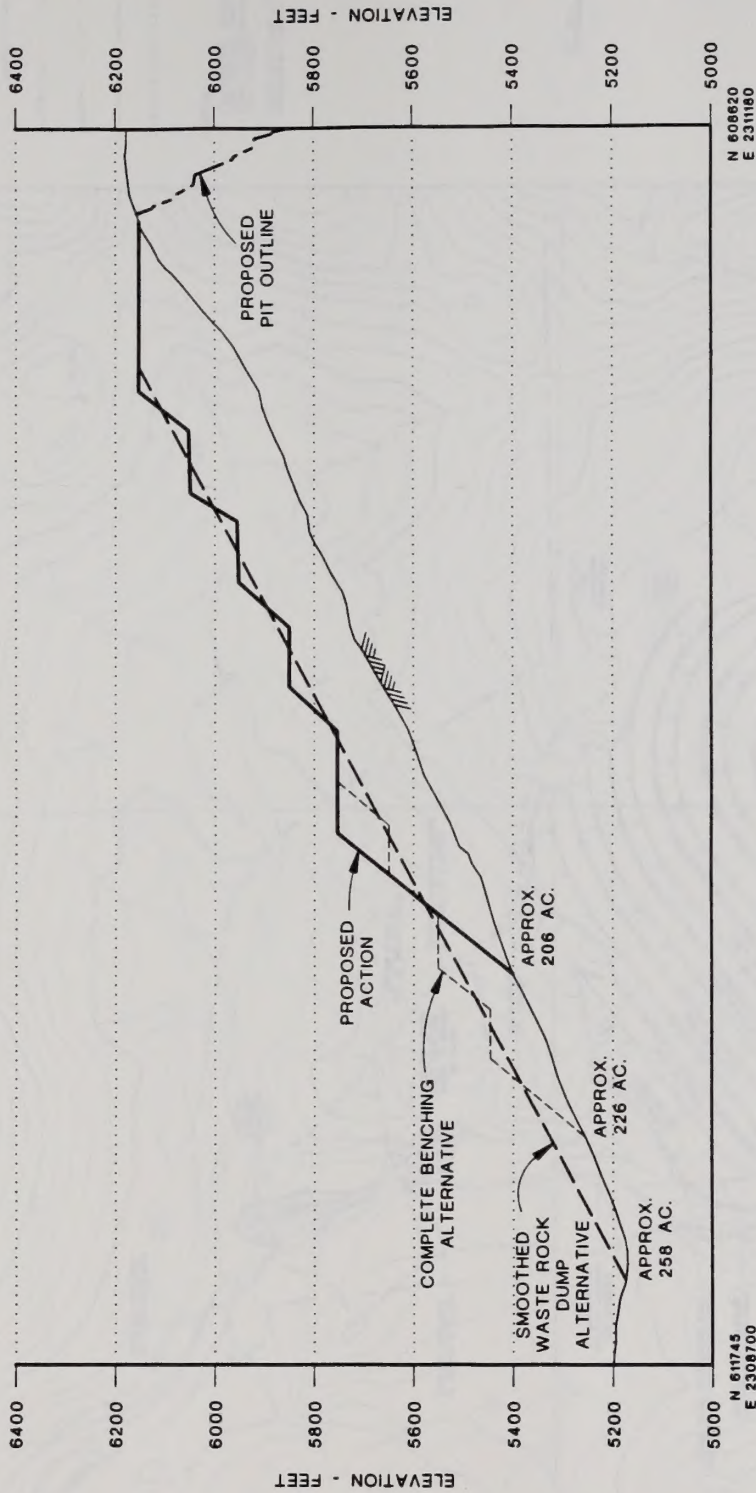
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FIGURE 4
HAYDEN HILL PROJECT
APPROXIMATE POST-RECLAMATION CONTOURS



EXPLANATION

- PROPOSED ACTION - BENCHING FROM TOP TO 5750' CONTOUR; ANGLE OF REPOSE BELOW 5750' CONTOUR
- - - COMPLETE BENCHING ALTERNATIVE - BENCHED TO BOTTOM
- - - SMOOTHED WASTE ROCK DUMP ALTERNATIVE - BENCHES GRADED OUT AFTER DUMP COMPLETION
- - - PROPOSED PIT OUTLINE
- /// ORIGINAL GROUND

NOTES: CROSS SECTION IS LOOKING NORTH
APPROX. VERTICAL SCALE: 1"=250'
APPROX. HORIZONTAL SCALE: 1"=400'

FIGURE 5



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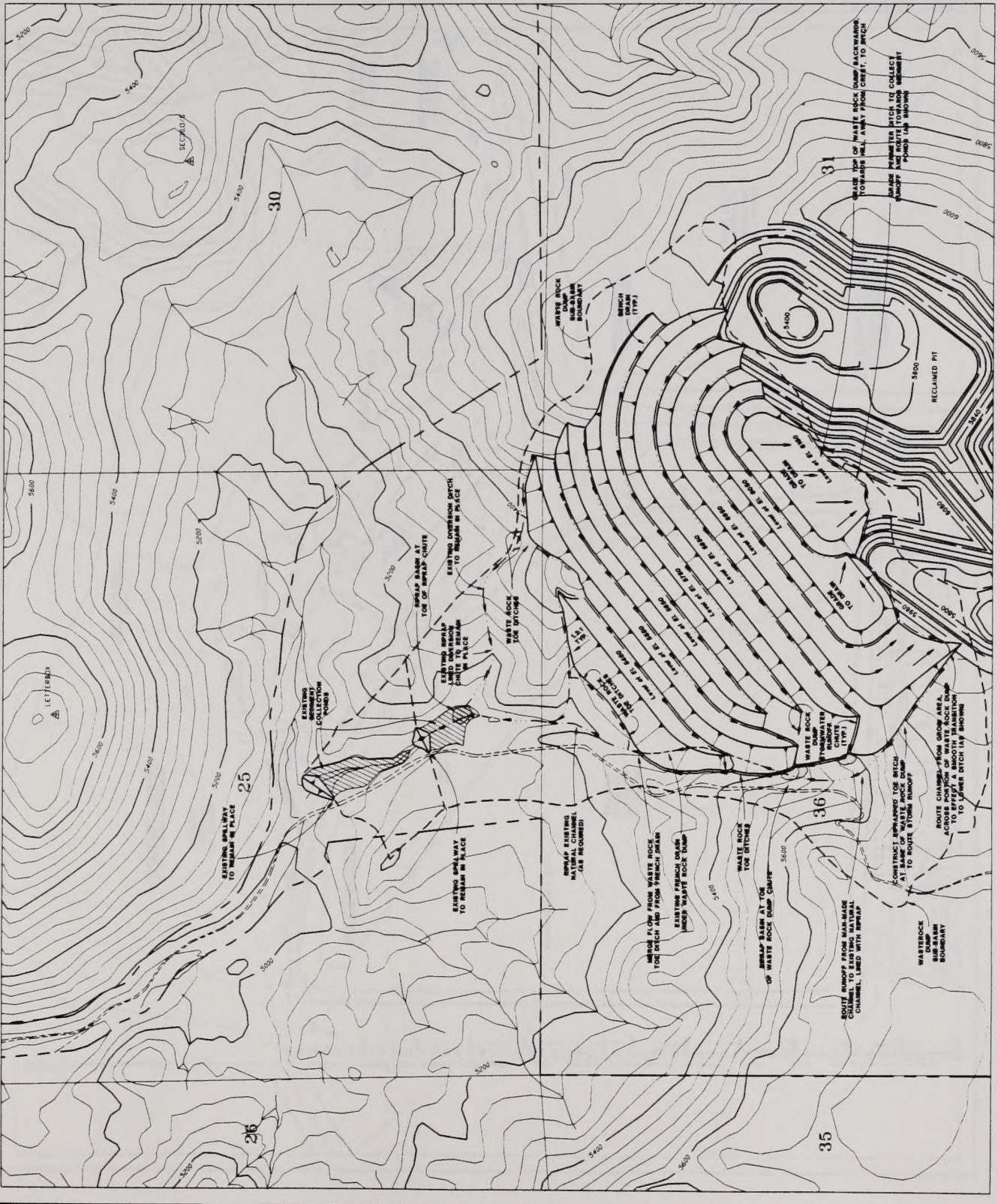
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**HAYDEN HILL PROJECT
CROSS SECTION OF
WASTE ROCK DUMPS**



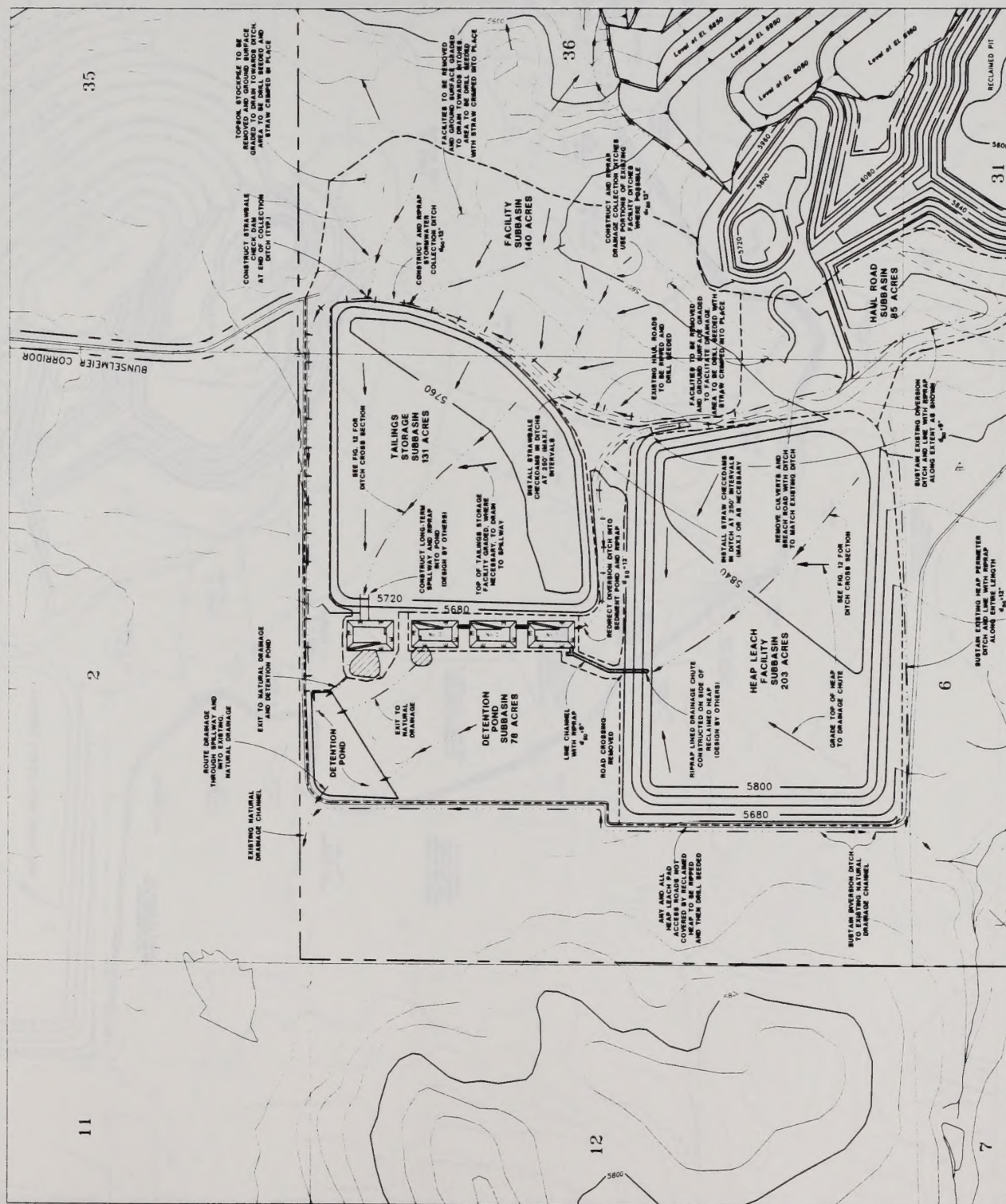
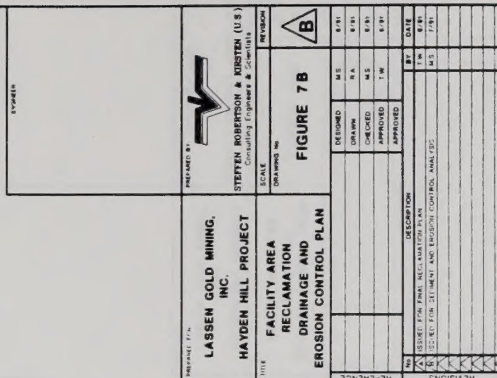
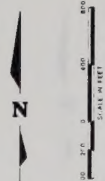
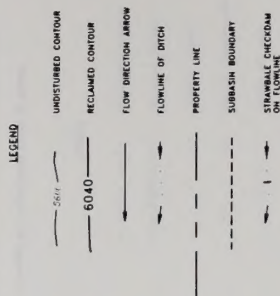
LEGEND

- UNDISTURBED CONTOUR
- RECLAIMED CONTOUR
- FLOW DIRECTION ARROW
- FLOWLINE OF DITCH
- PROPERTY LINE
- SUBBASIN BOUNDARY
- EXISTING ROAD

NOTES:

1. ALL CONTOUR, BOUNDARY, COLLECTION POND AND RECAP LINES DISCLOSED DURING THE DESIGN PROCESS. NIGHT-PERIOD DRAWINGS INCLUDING, BUT NOT LIMITED TO, 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 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1342. 1343. 1344. 1345. 1346. 1347. 1348. 1349. 1350. 1351. 1352. 1353. 1354. 1355. 1356. 1357. 1358. 1359. 1360. 1361. 1362. 1363. 1364. 1365. 1366. 1367. 1368. 1369. 1370. 1371. 1372. 1373. 1374. 1375. 1376. 1377. 1378. 1379. 1380. 1381. 1382. 1383. 1384. 1385. 1386. 1387. 1388. 1389. 1390. 1391. 1392. 1393. 1394. 1395. 1396. 1397. 1398. 1399. 1400. 1401. 1402. 1403. 1404. 1405. 1406. 1407. 1408. 1409. 1410. 1411. 1412. 1413. 1414. 1415. 1416. 1417. 1418. 1419. 1420. 1421. 1422. 1423. 1424. 1425. 1426. 1427. 1428. 1429. 1430. 1431. 1432. 1433. 1434. 1435. 1436. 1437. 1438. 1439. 1440. 1441. 1442. 1443. 1444. 1445. 1446. 1447. 1448. 1449. 1450. 1451. 1452. 1453. 1454. 1455. 1456. 1457. 1458. 1459. 1460. 1461. 1462. 1463. 1464. 1465. 1466. 1467. 1468. 1469. 1470. 1471. 1472. 1473. 1474. 1475. 1476. 1477. 1478. 1479. 1480. 1481. 1482. 1483. 1484. 1485. 1486. 1487. 1488. 1489. 1490. 1491. 1492. 1493. 1494. 1495. 1496. 1497. 1498. 1499. 1500. 1501. 1502. 1503. 1504. 1505. 1506. 1507. 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1674. 1675. 1676. 1677. 1678. 1679. 1680. 1681. 1682. 1683. 1684. 1685. 1686. 1687. 1688. 1689. 1690. 1691. 1692. 1693. 1694. 1695. 1696. 1697. 1698. 1699. 1700. 1701. 1702. 1703. 1704. 1705. 1706. 1707. 1708. 1709. 1710. 1711. 1712. 1713. 1714. 1715. 1716. 1717. 1718. 1719. 1720. 1721. 1722. 1723. 1724. 1725. 1726. 1727. 1728. 1729. 1730. 1731. 1732. 1733. 1734. 1735. 1736. 1737. 1738. 1739. 1740. 1741. 1742. 1743. 1744. 1745. 1746. 1747. 1748. 1749. 1750. 1751. 1752. 1753. 1754. 1755. 1756. 1757. 1758. 1759. 1760. 1761. 1762. 1763. 1764. 1765. 1766. 1767. 1768. 1769. 1770. 1771. 1772. 1773. 1774. 1775. 1776. 1777. 1778. 1779. 1780. 1781. 1782. 1783. 1784. 1785. 1786. 1787. 1788. 1789. 1790. 1791. 1792. 1793. 1794. 1795. 1796. 1797. 1798. 1799. 1800. 1801. 1802. 1803. 1804. 1805. 1806. 1807. 1808. 1809. 1810. 1811. 1812. 1813. 1814. 1815. 1816. 1817. 1818. 1819. 1820. 1821. 1822. 1823. 1824. 1825. 1826. 1827. 1828. 1829. 1830. 1831. 1832. 1833. 1834. 1835. 1836. 1837. 1838. 1839. 1840. 1841. 1842. 1843. 1844. 1845. 1846. 1847. 1848. 1849. 1850. 1851. 1852. 1853. 1854. 1855. 1856. 1857. 1858. 1859. 1860. 1861. 1862. 1863. 1864. 1865. 1866. 1867. 1868. 1869. 1870. 1871. 1872. 1873. 1874. 1875. 1876. 1877. 1878. 1879. 1880. 1881. 1882. 1883. 1884. 1885. 1886. 1887. 1888. 1889. 1890. 1891. 1892. 1893. 1894. 1895. 1896. 1897. 1898. 1899. 1900. 1901. 1902. 1903. 1904. 1905. 1906. 1907. 1908. 1909. 1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917. 1918. 1919. 1920. 1921. 1922. 1923. 1924. 1925. 1926. 1927. 1928. 1929. 1930. 1931. 1932. 1933. 1934. 1935. 1936. 1937. 1938. 1939. 1940. 1941. 1942. 1943. 1944. 1945. 1946. 1947. 1948. 1949. 1950. 1951. 1952. 1953. 1954. 1955. 1956. 1957. 1958. 1959. 1960. 1961. 1962. 1963. 1964. 1965. 1966. 1967. 1968. 1969. 1970. 1971. 1972. 1973. 1974. 1975. 1976. 1977. 1978. 1979. 1980. 1981. 1982. 1983. 1984. 1985. 1986. 1987. 1988. 1989. 1990. 1991. 1992. 1993. 1994. 1995. 1996. 1997. 1998. 1999. 2000. 2001. 2002. 2003. 2004. 2005. 2006. 2007. 2008. 2009. 2010. 2011. 2012. 2013. 2014. 2015. 2016. 2017. 2018. 2019. 2020. 2021. 2022. 2023. 2024. 2025. 2026. 2027. 2028. 2029. 2030. 2031. 2032. 2033. 2034. 2035. 2036. 2037. 2038. 2039. 2040. 2041. 2042. 2043. 2044. 2045. 2046. 2047. 2048. 2049. 2050. 2051. 2052. 2053. 2054. 2055. 2056. 2057. 2058. 2059. 2060. 2061. 2062. 2063. 2064. 2065. 2066. 2067. 2068. 2069. 2070. 2071. 2072. 2073. 2074. 2075. 2076. 2077. 2078. 2079. 2080. 2081. 2082. 2083. 2084. 2085. 2086. 2087. 2088. 2089. 2090. 2091. 2092. 2093. 2094. 2095. 2096. 2097. 2098. 2099. 2100. 2101. 2102. 2103. 2104. 2105. 2106. 2107. 2108. 2109. 2110. 2111. 2112. 2113. 2114. 2115. 2116. 2117. 2118. 2119. 2120. 2121. 2122. 2123. 2124. 2125. 2126. 2127. 2128. 2129. 2130. 2131. 2132. 2133. 2134. 2135. 2136. 2137. 2138. 2139. 2140. 2141. 2142. 2143. 2144. 2145. 2146. 2147. 2148. 21

1. FOR ADDITIONAL HEAP RECLAMATION DETAILS, REFER TO THE RECLAMATION AND DRAWING 3272.194 AND DRAWING 3272.192.
2. FOR ADDITIONAL TAILINGS FACILITY RECLAMATION DETAILS, REFER TO KNIGHT AND PIESOLD DRAWING 3272.193.
3. TOPSOIL WILL BE USED TO COVER THE TAILINGS STORAGE FACILITY AND THE HEAP LEACH FACILITY. THE AREAS WILL THEN BE DRILL SEEDED AND MAY WILL BE CRIMPED IN PLACE.



NOTES:

- SUBBASIN AREA 11 REMAINS SOMEWHAT UNIMPACTED BY MINING OPERATIONS. THE MAJORITY OF TOTAL EROSION AREAS DRAIN TO AREAS AND LOCATIONS SHOWN HEREIN ARE ACTIVITIES GENERALLY ASSOCIATED WITH THE HAYDEN HILL ROAD RECONSTRUCTION.
- THOSE AREAS LEFT BARREN AS A RESULT OF MINING OPERATIONS SHOULD BE REVEGETATED WITH THE TOPSOIL DISTRIBUTED AND SEEDING (OR HYDROMULCHED/SEEDING AS REQUIRED).
- ALL ROADS "C" DITCHES SHOULD BE REPAIRED WITH A MINIMUM 200'-8" AREAS WHERE THE ROADSIDE DITCH GRADE FULFILLS TO 1% OR LESS SHALL ALSO REPAIR STABILIZED DITCHES.
- CULVERT DIAMETERS AND LOCATIONS PROVIDED BY LOM.
- HAYDEN HILL ACCESS ROAD DESIGN BY OTHERS.

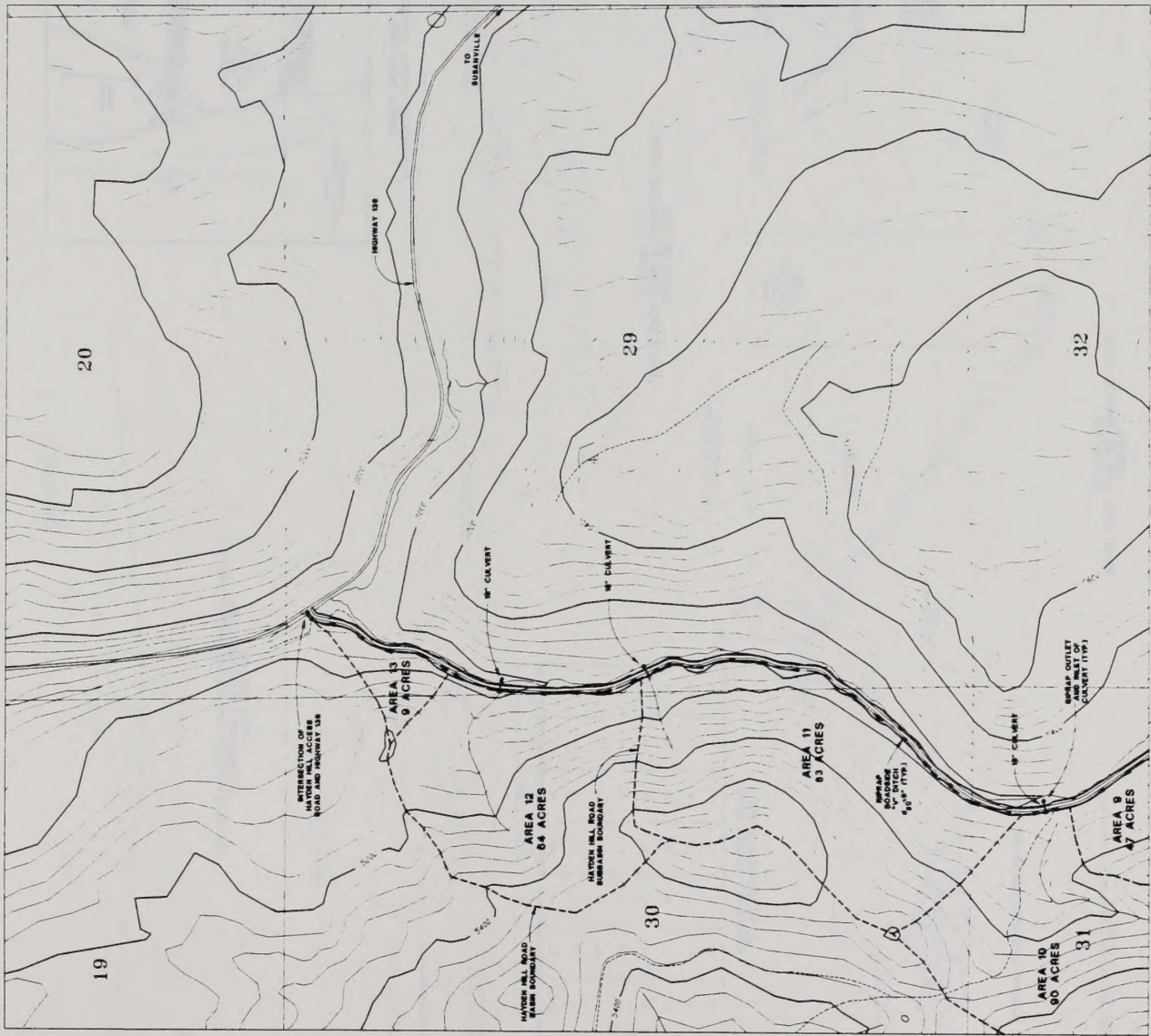
LEGEND

- UNDISTURBED CONTOUR
- RECLAIMED CONTOUR
- SUBBASIN LOWLINE
- EXISTING ROADSIDE DITCH
- HAYDEN HILL ROAD
- PROPERTY LINE
- SUBBASIN BOUNDARY
- CULVERT WITH STRAPBARS AND RPPAP



CONTINUED ON FIGURE 100

<p>PROJECT NO. 100</p> <p>LASSEN GOLD MINING, INC.</p> <p>HAYDEN HILL PROJECT</p>		<p>DESIGNED BY: STEVEN ROBERTSON & KUSTER (U.S.)</p> <p>SCALE: AS SHOWN ON MAP</p> <p>DATE: 10/1/88</p>	
<p>PROJECT NO. 100</p> <p>HAYDEN HILL ROAD</p> <p>EROSION CONTROL PLAN</p>		<p>FIGURE 8A</p>	
<p>DESIGNED: 8/81</p> <p>CHECKED: 8/81</p> <p>APPROVED: 8/81</p>		<p>DATE: 8/81</p>	
<p>DESIGNED FOR: FINAL RECLAMATION PLAN</p> <p>DESIGNED FOR: RECLAMATION AND EROSION CONTROL ANALYSIS</p>		<p>DATE: 8/81</p>	



NOTES:

1. SUBBASIN AREAS 11-13 ARE UNIMPACTED BY MINING AND ARE NOT SUBJECT TO EROSION CONTROL. THE ANALYSIS AND DESIGN OF EROSION CONTROL MEASURES ASSOCIATED WITH THE HAYDEN HILL ROAD RECONSTRUCTION, INCLUDING THE HAYDEN HILL ROAD RECONSTRUCTION, ARE LIMITED TO AREAS 9-10 AND 12-13.
2. ROAD AREAS 11-13 ARE NOT SUBJECT TO EROSION CONTROL. THE TOPSOIL DISTRIBUTION AND AREA DRAINAGE SHOULD BE MAINTAINED AS EXISTING.
3. ALL ROADSIDE "V" DITCHES SHOULD BE RIPRAPPED WITH 18" DIA. RIPRAP. ALL "V" DITCHES SHOULD BE REDESIGNED TO INCLUDE STRAWBALE CHECKDAMS.
4. CULVERT DIAMETERS AND LOCATIONS PROVIDED BY LCM.
5. HAYDEN HILL ACCESS ROAD DESIGN BY OTHERS.

LEGEND

- UNDISTURBED CONTOUR
- RECLAIMED CONTOUR
- SUBBASIN FLOWLINE
- EXISTING ROADSIDE DITCH
- HAYDEN HILL ROAD
- PROPERTY LINE
- SUBBASIN BOUNDARY
- CULVERT WITH STRAWBALES AND RIPRAP

LASSEN GOLD MINING, INC.
HAYDEN HILL PROJECT

WATERCROSS DUMP
DRAINAGE AND
EROSION CONTROL PLAN

FIGURE 8B

SCALE

DESIGNED BY

CHECKED BY

APPROVED BY

DATE

BY

DATE

BY

DATE

BY

DATE



STEFFEN ROBERTSON & KISTNER (U.S.)
Consulting Engineers & Scientists

FIGURE 8B

SCALE

DESIGNED BY

CHECKED BY

APPROVED BY

DATE

BY

DATE

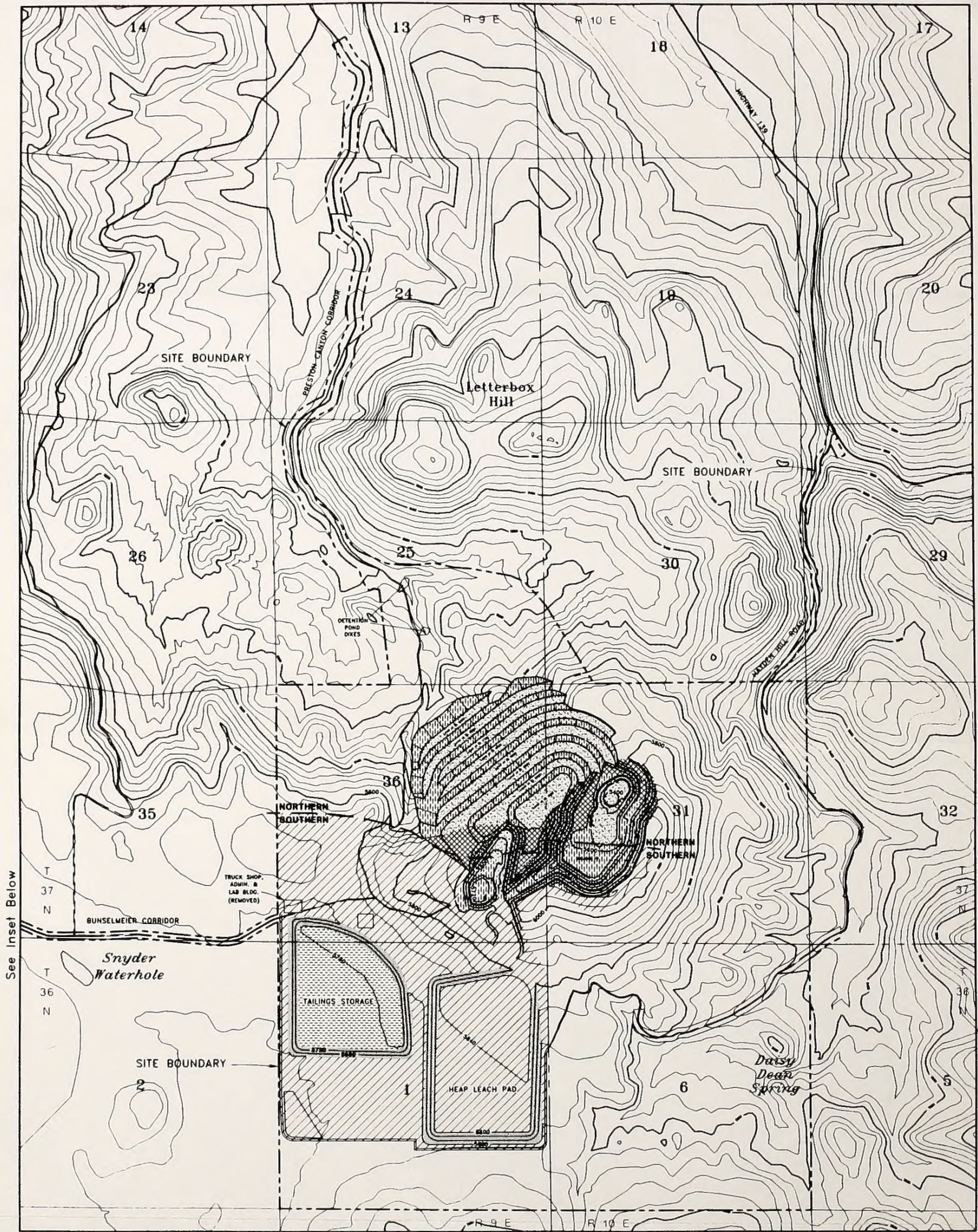
BY

DATE

BY

DATE

CONTINUED ON FIGURE 8A



See Inset Below


CONTOUR INTERVAL = 40 FT.
0 1000 2000 4000 Feet
1:12000

LEGEND

- (1A) 'DRY SITE - MODERATE TO COARSE TEXTURE' SEED MIX (TAILINGS AND HEAP LEACH PAD SLOPES)
- (1) 'DRY SITE - MODERATE TO COARSE TEXTURE' SEED MIX (GRASSLAND LOW-GRADIENT AREAS)
- (2) 'DRY SITE - FINE TO MODERATE TEXTURE' SEED MIX (TAILINGS SURFACE)
- (3) 'INTERMEDIATE SITE' SEED MIX (UPLAND-LOW GRADIENT, NORTH ASPECT WITH JEFFERY PINE)
- (3) 'INTERMEDIATE SITE' SEED MIX (UPLAND-LOW GRADIENT, SOUTH ASPECT W/O JEFFERY PINE)
- (4) 'SHRUB SITE' SEED MIX (UPLAND SLOPES)

NOTE: SEE TABLE 4.5-1 "SEED MIXTURES"



PREPARED FOR: LASSEN GOLD MINING, INC. HAYDEN HILL PROJECT		PREPARED BY:  STEFFEN ROBERTSON & KIRSTEN (U.S. Consulting Engineers & Scientists)	
TITLE: PLANTING PLAN		SCALE: DRAWING NO.	REVISION: FIGURE 10
DESIGNED: T.W. 8/81		DRAWN: R.A. 8/81	CHECKED: T.W. 8/81
APPROVED: R.D. 8/81		APPROVED: [Signature]	
No. 1		DESCRIPTION: ISSUED FOR AGENCY APPROVAL	
BY: [Signature]		DATE: 8/81	

SPECIES LIST

FLORA LOCATED WITHIN THE PROPOSED FOOTPRINT OF THE
HAYDEN HILL GOLD MINE, LASSEN COUNTY, CALIFORNIA
1989 AND 1990
GRANT 1990

APPENDIX F Vegetation Species List

		SAMPLING TYPE		
Scientific Name Common Name	Live Sept	Dried March	Site Type	Ground Pkt
TAXES (1989)				
<i>Adiantum occidentale</i> Western ladyfern	X	X	X	X
<i>Phlox glauca</i> Lewy phlox	-	X	X	-
SPECIES (1990)				
<i>Asplenium platyneuron</i> Rock-fern	-	X	X	-
<i>Trichophyton pinnatifidum</i> Ornamental fern	-	-	X	-
<i>Asplenium platyneuron</i> Rock-fern	-	X	-	-
<i>Asplenium platyneuron</i> Rock-fern	X	X	X	X
<i>Asplenium platyneuron</i> Rock-fern	X	X	X	X
<i>Asplenium platyneuron</i> Rock-fern	-	X	X	-
<i>Asplenium platyneuron</i> Rock-fern	-	X	X	-

SPECIES LIST

FLORA LOCATED WITHIN THE PROPOSED BOUNDARIES OF THE
HAYDEN HILL GOLD MINE, LASSEN COUNTY, CALIFORNIA
1989 AND 1990
(GRANT 1990)

Scientific Name/ Common Name	Low Sage	Upland Shrub	HABITAT TYPE			Abandoned Heap Leach Pad
			Jeffrey Pine/ Mtn. Shrub	Grassland		
TREES (2 spp.)						
<i>Juniperus occidentalis</i> Western juniper	X	X	X	X		--
<i>Pinus jeffreyi</i> Jeffrey pine	--	X	X	--		--
SHRUBS (21 spp.)						
<i>Amelanchier alnifolia</i> Serviceberry	--	X	X	--		--
<i>Arctostaphylos patula</i> Greenleaf manzanita	--	--	X	--		--
<i>Artemisia cana</i> Silver sagebrush	--	X	--	--		--
<i>Artemisia arbuscula</i> Low sagebrush	X	X	X	X		--
<i>Artemisia tridentata</i> Big sagerush	X	X	X	X		--
<i>Ceanothus prostratus</i> Squaw carpet	--	X	X	--		--
<i>Ceanothus velutinus</i> Tobacco brush	--	X	X	--		--

SPECIES LIST
(continued)

Scientific Name/ Common Name	<u>HABITAT TYPE</u>				
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland	Abandoned Heap Leach Pad
SHRUBS (Con't) (21 spp.)					
<i>Cercocarpus ledifolius</i> Curl-leaf mountain mahogany	—	X	X	—	X
<i>Chrysothamnus nauseosus</i> Rubber rabbitbrush	—	X	X	X	X
<i>Chrysothamnus</i> sp. Rabbitbrush	—	X	—	—	—
<i>Leptodactylon pungens</i> leptodactylon	—	X	—	—	—
<i>Prunus emarginata</i> Bittercherry	—	X	X	—	—
<i>Prunus subcordata</i> Sierra plum	—	X	X	—	—
<i>Prunus virginiana</i> Chokecherry	—	X	X	—	—
<i>Purshia tridentata</i> Bitterbrush	—	X	—	—	X
<i>Ribes cereum</i> Squaw currant	—	X	X	—	—
<i>Ribes velutinum</i> Desert gooseberry	—	X	X	—	—

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
SHRUBS (Con't) (21 spp.)						
<i>Rosa woodsii</i> Wood rose	--	--	X	--	--	
<i>Sambucus sp.</i> Elderberry	--	--	X	--	X	
<i>Symphoricarpos oreophilus</i> Snowberry	--	X	X	--	--	
<i>Tetradymia canescens</i> Gray horsebrush	--	X	--	--	--	
GRAMINOIDS perennial (19 spp.)						
<i>Agropyron cristatuem</i> Crested wheatgrass	--	--	--	X	--	
<i>Agropyron intermedium</i> Intermediate wheatgrass	--	--	--	X	--	
<i>Agropyron spicatum</i> Bluebunch wheatgrass	--	X	X	--	--	
<i>Bromus carinatus</i> Mountain brome	--	X	X	--	X	
<i>Carex sp.</i> Sedge	--	X	X	--	--	

SPECIES LIST

(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
GRAMINOIDS perennial (Con't) (19 spp.)						
<i>Danthonia sp.</i> Danthonia	--	X	--	--	--	
<i>Elymus cinereus</i> Great Basin wildrye	--	--	X	--	--	
<i>Elymus glaucus</i> Blue Wildrye	--	X	X	--	--	
<i>Festuca idahoensis</i> Idaho fescue	X	X	X	--	--	
<i>Juncus sp.</i> Rush upland shrub	--	X	--	--	--	
<i>Koeleria macrantha</i> Junegrass	--	--	X	--	--	
<i>Melica bulbosa</i> Oniongrass	--	X	X	--	--	
<i>Poa bulbosa</i> Bulbous bluegrass	X	X	X	--	--	
<i>Poa pratensis</i> Kentucky bluegrass	--	--	--	--	X	
<i>Poa secunda</i> Sandberg bluegrass	X	X	X	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
GRAMINOIDS perennial (Con't) (19 spp.)						
<i>Poa sp.</i> Bluegrass	--	X	X	X	--	
<i>Sitanion hystrix</i> Squirreltail	X	X	X	X	X	
<i>Stipa lemmonii</i> Lemmon's needlegrass	--	X	X	--	--	
<i>Stipa thurberiana</i> Thurber needlegrass	--	X	X	--	--	
GRAMINOIDS annual (6 spp.)						
<i>Bromus japonicus</i> Japanese brome	--	X	X	--	--	
<i>Bromus tectorum</i> Cheatgrass	X	X	--	--	--	
<i>Deschampsia danthonoides</i> Annual hairgrass	--	X	X	X	X	
<i>Hordeum sp.</i> Foxtail	--	--	--	X	--	
<i>Taeniatherum asperum</i> Medusahead rye	--	--	--	X	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	<u>HABITAT TYPE</u>					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
GRAMINOIDS annual (Con't) (6 spp.)						
<i>Vulpia octoflora</i> Six-weeks fescue	X	X	--	--		--
FORBS perennial (95 spp.)						
<i>Achillea millefolium</i> Yarrow	--	X	X	--		--
<i>Agastache sp.</i> Horse-mint	--	--	X	--		--
<i>Agoseris glauca</i> Pale agoseris	X	X	X	--		--
<i>Allium sp.</i> Onion	X	X	--	--		--
<i>Antennaria dimorpha</i> Low pussytoes	X	X	X	--		--
<i>Antennaria flagellaris</i> Creeping pussytoes	X	--	--	--		--
<i>Antennaria microphylla</i> Rosy pussytoes	X	X	--	--		--
<i>Arabis sp.</i> Rockcress	--	X	X	--		--

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Arenaria congesta</i> Head sandwork	X	X	X	X	--	--
<i>Arnica sp.</i> Arnica	--	X	X	--	--	--
<i>Arnica cordifolia</i> Heart-leaf arnica	--	X	X	--	--	--
<i>Artemisia ludoviciana</i> Louisiana sage	--	--	X	--	--	--
<i>Asclepias cordifolia</i> Milkweed	--	X	--	--	--	--
<i>Astragalus filipes</i> Balsalt milkvetch	X	X	--	--	--	--
<i>Astragalus purshii</i> Pursh's milkvetch	X	X	--	--	--	--
<i>Astragalus whitneyi</i> Balloon milkvetch	--	X	X	--	--	--
<i>Balsamorhiza sagittata</i> Arrowleaf balsamroot	--	X	X	--	--	--
<i>Brodiaea multiflora</i> Brodiaea	--	--	X	--	--	--

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Calochortus leichtlinii</i> Mariposa lily	—	X	—	—		—
<i>Castilleja applegatei</i> Applegate's paintbrush	—	X	X	—		—
<i>Castilleja pilosa</i> Indian paintbrush	—	—	X	—		—
<i>Castilleja sp.</i> Paintbrush	X	—	—	—		—
<i>Cerastium viscosum</i> Sticky chickweed	—	—	X	—		X
<i>Chaenactis douglasii</i> Hoary chaenactis	—	—	X	—		—
<i>Cirsium vulgare</i> Bull thistle	—	—	—	—		X
<i>Cirsium sp.</i> Thistle	—	X	X	—		X
<i>Crepis acuminata</i> Tapertip hawksbeard	—	X	X	—		—
<i>Crepis modocensis</i> Low hawksbeard	—	—	X	X		—

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Crepis occidentalis</i> Western hawksbeard	--	--	X	--	--	
<i>Cystopteris fragilis</i> Bladder-fern	--	--	X	--	--	
<i>Delphinium nuttallianum</i> Larkspur	X	X	X	--	--	
<i>Dodecatheon conjugens</i> Slimpod shooting star	X	X	X	--	--	
<i>Draba douglasii</i> Douglas' draba	X	--	--	--	--	
<i>Eriophyllum lanatum</i> Common eriophyllum	X	X	--	--	X	
<i>Eriogonum douglasii</i> Douglas' buckwheat	X	--	--	--	--	
<i>Eriogonum nudum</i> Barestem buckwheat	--	X	X	--	X	
<i>Eriogonum ovalifolium</i> Cushion buckwheat	X	X	X	--	--	
<i>Eriogonum splaerocephalum</i> Round-headed eriogonum	X	--	--	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	Low Sage	Upland Shrub	<u>HABITAT TYPE</u>			
			Jeffrey Pine/ Mtn. Shrub	Grassland	Abandoned Heap Leach Pad	
FORBS perennial (Con't) (95 spp.)						
<i>Eriogonum umbellatum</i> Sulfur buckwheat	X	X	X	--	--	
<i>Erigeron bloomeri</i> Yellow daisy	X	X	--	--	--	
<i>Erigeron sp.</i> Daisy	--	X	X	--	--	
<i>Erysimum asperum</i> Rough wallflower	--	--	X	--	--	
<i>Frasera albicaulis</i> Frasera	--	X	X	--	--	
<i>Fritillaria aetropurpurea</i> Checker lily	--	X	--	--	--	
<i>Fritillaria pudica</i> Yellow bell	X	X	--	--	--	
<i>Geum triflorum</i> Prairie smoke avens	--	X	--	--	--	
<i>Gilia aggregata</i> Scarlet gilia	--	--	X	--	--	
<i>Hackelia sharsmithii</i> Hackelia	--	--	?	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Hackelia</i> sp. Stickseed	--	--	X	--	--	
<i>Haplopappus lanuginosus</i> Wooly goldenweed	--	X	--	--	--	
<i>Haplopappus stenophyllus</i> Goldenweed	X	X	--	--	--	
<i>Hesperochiron pumilus</i> Stickseed	X	X	--	--	--	
<i>Hieracium</i> sp. Hawkweed	--	--	X	--	--	
<i>Hydrophylluym capitatum</i> Ballhead waterleaf	--	X	X	--	--	
<i>Lathyrus lanszwertii</i> Thick-leaved peavine	--	X	--	--	--	
<i>Lewisia rediviva</i> Bitterroot	X	--	--	--	--	
<i>Linum perenne</i> Blue flax	--	X	X	--	--	
<i>Lithophragma</i> sp. Fringecup	X	X	X	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Lomatium dissectum</i> Fern-leaved lomatium	—	X	X	—		—
<i>Lomatium leptocarpum</i> Lomatium	X	X	—	—		—
<i>Lomatium nevadense</i> Nevada desert-parsley	X	X	X	—		—
<i>Lomatium nudicaule</i> Barestem lomatium	—	X	X	—		—
<i>Lomatium triternatum</i> Nine-leaf lomatium	—	X	X	—		—
<i>Lomatium vaginatum</i> Broadsheath lomatium	X	X	—	—		—
<i>Lupinus caudatus</i> Kellogg spurred lupine	—	X	X	—		—
<i>Machaeranthera sp.</i> Aster	—	X	—	—		—
<i>Marrubium vulgare</i> Horehound	—	—	—	—		—
<i>Medicago sativa</i> Alfalfa	—	—	—	—		—

SPECIES LIST
(continued)

Scientific Name/ Common Name	Low Sage	Upland Shrub	<u>HABITAT TYPE</u>			Abandoned Heap Leach Pad
			Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Microseris nutans</i> Nodding microseris	—	X	X	—	—	
<i>Osmorhiza occidentalis</i> Western sweet-root	—	—	X	—	—	
<i>Paeonia brownii</i> Brown's paeonia	—	X	X	—	—	
<i>Penstemon deustus</i> Hot-rock Penstemon	—	—	X	—	—	
<i>Penstemon sp.</i> Beardtongue	—	—	X	—	—	
<i>Perideridia sp.</i> Yampah	—	—	X	—	—	
<i>Phacelia heterophylla</i> Varileaf phacelia	—	X	X	—	—	
<i>Phacelia ramosissima</i> Phacelia	—	X	X	—	—	
<i>Phlox hoodii</i> Carpet phlox	X	X	X	—	—	
<i>Phlox longifolia</i> Long-leaf phlox	—	X	X	—	—	

SPECIES LIST
(continued)

Scientific Name/ Common Name	<u>HABITAT TYPE</u>				
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland	Abandoned Heap Leach Pad
FORBS perennial (Con't) (95 spp.)					
<i>Phoenicaulis cheiranthoides</i> Daggerwood	X	X	X	--	--
<i>Ranunculus glaberrimus</i> Sagebrush buttercup	--	X	--	--	--
<i>Ranunculus occidentalis</i> Buttercup	--	X	X	--	--
<i>Saxifraga nidifica</i> Saxifrage	--	X	--	--	--
<i>Scrophularia sp.</i> Figwort	--	--	X	--	--
<i>Senecio integerrimus</i> Western groundsel	--	X	X	--	--
<i>Senecio sp.</i> Groundsel	--	--	X	--	--
<i>Sidalcea sp.</i> Checker	--	X	X	--	--
<i>Streptanthus cordatus</i> Heart-leaved streptanthus	--	--	X	--	--
<i>Taraxacum officinale</i> Common dandelion	--	--	--	--	--

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland		
FORBS perennial (Con't) (95 spp.)						
<i>Tragopogon dubius</i> Goatsbeard	—	X	—	—	—	—
<i>Trifolium macrocephalum</i> Big-head clover	X	X	—	—	—	—
<i>Verbascum thapsus</i> Mullein	—	X	X	—	X	—
<i>Viola purpurea</i> Goosefoot viola	—	X	X	—	—	—
<i>Viola sp.</i> Daggerwood	—	—	X	—	—	—
<i>Wyethia mollis</i> Wyethia	—	X	X	X	—	—
<i>Zigadenus paniculatus</i> Panicled death-camas	X	X	X	—	—	—
FORBS annual (36 sp.)						
<i>Agoseris heterophylla</i> Annual agoseris	X	X	X	—	—	—
<i>Athysanus pusillus</i> Sandweed	—	X	X	—	—	—

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Pasture		
FORBS annual (Con't) (36 sp.)						
<i>Blepharipappus scaber</i> Blepharipappus	X	--	--	--	--	
<i>Chenopodium sp.</i> Goosefoot	--	--	--	X	--	
<i>Clarkia sp.</i> Clarkia	--	X	X	--	--	
<i>Collinsia parviflora</i> Blue-eyed Mary	X	X	X	X	--	
<i>Cryptantha sp.</i> Cryptantha	--	X	X	--	--	
<i>Descurainia pinnata</i> Western Tansymustard	--	X	--	--	--	
<i>Descurainia sp.</i> Tansymustard	--	X	X	--	--	
<i>Draba verna</i> Whitlow-grass	X	X	X	--	--	
<i>Epilobium brachycarpum</i> Autumn willowherb	X	--	--	X	--	
<i>Erodium cicutarium</i> Filaree	--	X	X	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Pasture		
FORBS annual (Con't) (36 sp.)						
<i>Galium aparine</i> Cleavers	--	X	X	--	--	
<i>Galium bifolium</i> Bedstraw	--	--	X	--	--	
<i>Gayophytum sp.</i> Gayophytum	X	X	X	X	X	
<i>Idahoia scapigera</i> Scalepod	X	X	--	--	--	
<i>Lagophylla ramosissima</i> Slender hareleaf	X	--	--	--	X	
<i>Linanthus harknessii</i> Harkness linanthus	X	X	X	--	--	
<i>Linum micranthum</i> Small-flowered white flax	--	X	X	--	--	
<i>Lotus purshiana</i> Spanish clover	X	--	--	--	--	
<i>Madia exigua</i> Little tarweed	X	X	--	--	--	
<i>Madia gracilis</i> Common tarweed	X	X	--	--	--	

SPECIES LIST
(continued)

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Pasture		
FORBS annual (Con't) (36 sp.)						
<i>Mentzelia albicaulis</i> Mentzelia	--	X	--	--	--	
<i>Microsteris gracilis</i> Pink microsteris	X	X	X	X	--	
<i>Mimulus sp.</i> Monkey-flower	X	X	--	--	--	
<i>Montia perfoliata</i> Miner's lettuce	--	X	X	--	--	
<i>Montia sp.</i> Montia	X	--	--	--	--	
<i>Nemophila pendunculata</i> Meadow nemophila	--	--	X	--	--	
<i>Navarretia breweri</i> Yellow-flowered navarretia	X	--	--	--	--	
<i>Orthocarpus copelandii</i> Owl-clover	--	--	X	--	--	
<i>Orthocarpus lithospermoides</i> Cream sacs	X	--	--	--	--	
<i>Phacelia linearis</i> Threadleaf phacelia	--	X	X	--	--	

SPECIES LIST **(continued)**

Scientific Name/ Common Name	HABITAT TYPE					Abandoned Heap Leach Pad
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Pasture		
FORBS annual (Con't) (36 sp.)						
<i>Plectritis macrocera</i> Long-horn plectritis	X	X	X	--	--	
<i>Polygonum sp.</i> Knotweed	X	X	X	X	--	
<i>Sisymbrium altissimum</i> Tumblemustard	--	--	--	--	X	
<i>Thysanocarpus curvipes</i> Sand fringepod	X	--	--	--	--	

SPECIES LIST
(continued)

SPECIES OCCURRENCE SUMMARY

Scientific Name/ Common Name	<u>HABITAT TYPE</u>			
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Grassland and Heap Leach Pad
TREE (2 sp.)	1	2	2	1
SHRUBS (21 sp.)	2	18	16	6
GRAMINOIDS				
Perennial (19 sp.)	4	14	14	6
Annual (6 sp.)	3	4	2	3
FORBS				
Perennial (98 sp.)	30	63	63	15
Annual (36 sp.)	20	23	20	8
TOTAL (179 sp.)	60	124	117	39
ACREAGE	647	771	997	60

**ADDITIONAL SPECIES LOCATED IN HAYDEN HILL
LASSEN COUNTY, CALIFORNIA
1989 AND 1990
(GRANT 1990)**

Scientific Name/ Common Name	<u>HABITAT TYPE</u>			
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow
TREES (1 spp.)				
<i>Populus tremuloides</i> Quaking Aspen	--	--	X	--
SHRUBS (2 spp.)				
<i>Chamaebatiaria millefolium</i> Fern bush	--	--	X*	--
<i>Holodiococcus dumosus</i> Glandular ocean spray	--	--	X*	--
GRAMINOIDS perennial (2 spp.)				
<i>Eleocharis</i> spp. Spike rush	--	--	--	X
<i>Hordeum brachyantherum</i> Meadow barley	--	--	--	X
GRAMINOIDS annual (1 spp.)				
<i>Bromus mollis</i> Soft brome	--	--	--	X

SPECIES LIST
(continued)

Scientific Name/ Common Name	<u>HABITAT TYPE</u>			
	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow
FORBS perennial (8 spp.)				
<i>Aster</i>				
Aster	--	--	--	X
<i>Calochortus macrocarpus</i>				
Sagebrush mariposa	--	--	X	--
<i>Eupatorium occidentale</i>				
Western eupatorium	--	--	X*	--
<i>Hackelia cusickii</i>				
Cusick's stickseed	--	--	X*	--
<i>Haplopappus carthamoides</i>				
Columbia goldenweed	--	--	--	X
<i>Kelloggia galioides</i>				
Kellogia	--	--	X	--
<i>Potendilla glandulosa</i>				
Sticky cinquefoil	--	--	X	--
<i>Silene Spp.</i>				
Campion	--	--	X	X
* Rock Outcrop				
FORBS annual (7 spp.)				
<i>Boisduvalia stricta</i>				
Stiff spike-primrose	--	--	--	X

SPECIES LIST
(continued)

Scientific Name/ Common Name	<u>HABITAT TYPE</u>			
	Low Shrub	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow
FORBS annual (Con't) (7 spp.)				
<i>Gnaphalium palustre</i> Lowland cudweed	--	--	--	X
<i>Madia glomerata</i> Mountain tarweed	--	--	--	X
<i>Navarredia intertexta</i> Needle-leaf novarredia	--	--	--	X
<i>Nicotiana attenuada</i> Coyote tobacco	--	--	X	--
<i>Sanguisorba occidentalis</i> Annual bernet	--	--	--	X
<i>Trifolium cyathiferum</i> Cup clover	--	--	--	X

**Wildlife Species List; Benthic Invertebrae Taxa List;
Proposed Sage Grouse Mitigation (1990);
Passive Relocation of Sage Grouse (June, 1991)**

Wildlife Species List; Benthic Invertebrae Taxa List;		Proposed Sage Grouse Mitigation (1990);		Passive Relocation of Sage Grouse (June, 1991)	
<i>Ardea herodias</i> Great Blue Heron	S				
<i>Cyrus ulrichsoni</i> Tussock Wren	M				X
<i>Branta canadensis</i> Canada Goose	S				X
<i>Anas crecca</i> Canada-winged Teal	M				X
<i>Anas platyrhynchos</i> Mallard	S				X
<i>Larus argentatus</i> Marathon Petrel	L				X
<i>Buzo campensis</i> Cinnabar Teal	S				X
<i>Anas strepera</i> Cackwall	S				X
<i>Anas americana</i> American Widgeon	M				X
<i>Anas americana</i> Redhead	M				X
<i>Anas platyrhynchos</i> Wing-banded teal	M				X

APPENDIX G
BIRD AND MAMMAL SPECIES LIST
Observed during June 1989 & May 1990

Genus/Species	ABUNDANCE				
	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Podilymbus podiceps</i> Pied-billed Grebe	M	-	-	-	X
<i>Ardea herodias</i> Great Blue Heron	S	-	-	-	X
<i>Cygnus columbianus</i> Tundra Swan	M	-	-	-	X
<i>Branta canadensis</i> Canada Goose	S	-	-	-	X
<i>Anas crecca</i> Green-winged Teal	M	-	-	-	X
<i>Anas platyrhynchos</i> Mallard	S	-	-	-	X
<i>Anas acuta</i> Northern Pintail	S	-	-	-	X
<i>Anas cyanoptera</i> Cinnamon Teal	S	-	-	-	X
<i>Anas strepera</i> Gadwall	S	-	-	-	X
<i>Anas americana</i> American Wedgeon	M	-	-	-	X
<i>Aythya americana</i> Redhead	M	-	-	-	X
<i>Aythya collaris</i> Ring-necked duck	M	-	-	-	X

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

Genus/Species	ABUNDANCE				
	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Aythya affinis</i> Lesser Scaup	S	-	-	-	X
<i>Bucephala albeola</i> Bufflehead	S	-	-	-	X
<i>Oxyura jamaicensis</i> Ruddy Duck	M	-	-	-	X
<i>Cathartes aura</i> Turkey Vulture	S	X	X	X	X
<i>Haliaeetus leucocephalus</i> Bald Eagle	T	X	X	-	X
<i>Circus cyaneus</i> Northern Harrier	P	X	X	-	X
<i>Accipiter striatus</i> Sharp-shinned Hawk	M	-	-	-	-
<i>Accipiter gentilis</i> Goshawk	P	-	-	X	-
<i>Buteo jamaicensis</i> Red-tailed Hawk	P	X	X	X	X
<i>Aquila chrysaetos</i> Golden Eagle	P	X	-	-	-
<i>Falco sparverius</i> American Kestrel	S	X	X	-	-
<i>Falco mexicanus</i> Prairie Falcon	P	X	X	-	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

ABUNDANCE

Genus/Species	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Centrocercus urophasianus</i> Sage Grouse	P	X	X	-	-
<i>Fulica americana</i> American Coot	S	-	-	-	X
<i>Grus canadensis</i> Sandhill Crane	S	-	-	-	X
<i>Charadrius vociferus</i> Killdeer	S	X	-	-	X
<i>Himantopus mexicanus</i> Black-necked Stilt	S	-	-	-	X
<i>Recurvirostra americana</i> American Avocet	S	-	-	-	X
<i>Tringa melanoleuca</i> Lesser Yellowlegs	M	-	-	-	X
<i>Calidris minutilla</i> Least Sandpiper	S	-	-	-	X
<i>Phalaropus tricolor</i> Wilson's Phalarope	S	-	-	-	X
<i>Zenaida macroura</i> Mourning Dove	S	X	X	X	X
<i>Bubo virginianus</i> Great Horned Owl	P	X	X	X	X
<i>Phalaenoptilus nuttallii</i> Common Poorwill	S	X	X	X	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

ABUNDANCE

Genus/Species	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Selasphorus platycercus</i> Broad-tailed Hummingbird	S	-	X	X	-
<i>Sphyrapicus ruber</i> Red-breasted Sapsucker	S	-	X	-	-
<i>Picoides albolarvatus</i> White-headed Woodpecker	S	-	X	-	-
<i>Colaptes auratus</i> Northern Flicker	P	X	X	X	X
<i>Tyrannus verticalis</i> Western Kingbird	S	X	X	-	-
<i>Empidonax hammondi</i> Hammond's Flycatcher	S	-	X	-	-
<i>Eremophila alpestris</i> Horned Lark	P	X	-	-	-
<i>Tachycineta bicolor</i> Tree Swallow	S	-	-	X	X
<i>Tachycineta thalassina</i> Violet-green Swallow	S	X	-	-	X
<i>Stelgidopteryx serripennis</i> Northern Rough-winged Swallow	S	X	-	-	X
<i>Hirundo rustica</i> Barn Swallow	S	X	-	-	X
<i>Cyanositta stelleri</i> Steller's Jay	P	-	-	X	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

ABUNDANCE

Genus/Species	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Aphelocoma coerulescens</i> Scrub Jay	P	-	X	X	-
<i>Gymnorhinus cyanocephalus</i> Pinyon Jay	T	X	X	-	-
<i>Nucifraga columbiana</i> Clark's Nutcracker	P	-	X	X	-
<i>Parus gambeli</i> Mountain Chickadee	P	-	X	X	-
<i>Parus inornatus</i> Plain Titmouse	M	-	X	X	-
<i>Sitta canadensis</i> Red-breasted Nuthatch	P	-	-	X	-
<i>Sitta carolinensis</i> White-breasted Nuthatch	P	-	-	-	-
<i>Sitta pygmaea</i> Pygmy Nuthatch	P	-	-	X	-
<i>Salpinctes obsoletus</i> Rock Wren	S	X	X	-	-
<i>Troglodytes aedon</i> House Wren	S	-	-	-	X
<i>Regulus calendula</i> Ruby-crowned Kinglet	S	-	-	X	-
<i>Sialia mexicana</i> Western Bluebird	S	-	X	X	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

Genus/Species	Residency Status	ABUNDANCE			
		Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Sialia currucoides</i> Mountain Bluebird	S	X	X	X	-
<i>Myadestes townsendi</i> Townsends Solitaire	P	-	-	X	-
<i>Citharus guttatus</i> Hermit Thrush	S	-	-	X	-
<i>Turdus migratorius</i> American Robin	S	X	X	X	X
<i>Oreoscoptes montanus</i> Sage Thrasher	S	X	X	-	-
<i>Sturnus vulgaris</i> European Starling	S	X	-	-	-
<i>Vireo gilvus</i> Warbling Vireo	S	-	-	X	-
<i>Dendroica coronata</i> Yellow-rumped Warbler	S	-	-	X	-
<i>Wilsonia pusilla</i> Wilson's Warbler	S	-	-	X	-
<i>Piranga ludoviciana</i> Western Tanager	S	-	-	X	-
<i>Pheucticus melanocephalus</i> Black-headed Grosbeak	S	-	X	X	-
<i>Passerina amoena</i> Lazuli Bunting	S	-	X	X	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

Genus/Species	Residency Status	ABUNDANCE			
		Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Pipilo chlorurus</i> Green-tailed Towhee	S	-	X	X	X
<i>Pipilo erythrophthalmus</i> Rufous-sided Towhee	S	-	X	X	-
<i>Spizella breweri</i> Brewer's Sparrow	S	X	X	X	-
<i>Spizella passerina</i> Chipping Sparrow	S	-	X	-	-
<i>Melospiza melodia</i> Song Sparrow	S	-	-	X	-
<i>Poocetes gramineus</i> Vesper Sparrow	S	X	X	-	-
<i>Junco hyemalis</i> Dark-eyed Junco	P	-	X	X	-
<i>Agelaius phoeniceus</i> Red-winged Blackbird	S	X	-	-	X
<i>Euphagus cyanocephalus</i> Brewer's Blackbird	P	X	-	-	X
<i>Molothrus ater</i> Brown-headed Cowbird	S	-	X	X	-
<i>Sturnella neglecta</i> Western Meadowlark	S	X	X	-	X
<i>Carpodacus cassinii</i> Cassin's Finch	S	-	X	X	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

ABUNDANCE					
Genus/Species	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Sturnella neglecta</i> Western Meadowlark	S	X	X	-	X
<i>Carpodacus cassinii</i> Cassin's Finch	S	-	X	X	-
<i>Carpodacus mexicanus</i> House Finch	S	-	X	-	-
<i>Loxia curvirostra</i> Red Crossbill	P	-	-	X	X
<i>Plegadis chihi</i> White-faced ibis	T	-	-	-	X
<i>Ceryle alcyon</i>	T	-	-	-	X
Species (88 spp)		29	38	43	58

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

ABUNDANCE

Genus/Species	Residency Status	Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Marmota flaviventris</i> Yellow-bellied Marmot	P	X	X	X	X
<i>Spermophilus beldingi</i> Belding's Ground Squirrel	P	X	-	-	X
<i>Spermophilus lateralis</i> Golden-mantled Ground Squirrel	P	X	X	X	X
<i>Spermophilus variegatus</i> Rock Squirrel	P	-	X	X	X
<i>Eutamias minimus</i> Least Chipmunk	P	-	X	X	X
<i>Sciurus griseus</i> Western Gray Squirrel	P	-	X	X	-
<i>Thomomys talpoides</i> Northern Pocket Gopher	P	X	X	X	X
<i>Dipodomys californicus</i> California Kangaroo Rat	P	-	X	X	X
<i>Reithrodontomys megalotis</i> Western Harvest Mouse	P	X	-	-	-
<i>Peromyscus maniculatus</i> Deer mouse	P	X	X	X	X
<i>Peromyscus truei</i> Pinon Mouse	P	-	-	-	-
<i>Neotoma cinerea</i> Bushy-tailed Woodrat	P	-	X	-	-

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

Genus/Species	Residency Status	ABUNDANCE			
		Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub	Meadow/ Pond
<i>Neotoma fuscipes</i> Dusky-footed Woodrat	P	-	-	X	X
<i>Microtus montanus</i> Montane Vole	P	-	X	-	-
<i>Sylvilagus nuttallii</i> Nuttall's Cottontail	P	-	X	X	X
<i>Canis latrans</i> Coyote	P	X	X	X	X
<i>Felis concolor</i> Mountain Lion	T	-	-	X	-
<i>Mephitis mephitis</i> Striped Skunk	P	X	X	X	X
<i>Odocoileus hemionus</i> Mule Deer	P	X	X	X	X
<i>Antilocapra americana</i> Pronghorn	S	X	-	-	X
SPECIES (21 spp)		11	15	16	15

X denotes presence in that habitat, - denotes absence, P - permanent resident, S - summer resident, M - migrant, W - winter resident, T - transient.

Table 9. Reptilian residency status, habitat distribution and species richness at Hayden Hill, Lassen County, California during June 1989. X denotes presence.

Genus/species	Residency Status	ABUNDANCE Number/kilometer (Individuals/100 trap nights)		
		Low Sage	Upland Shrub	Jeffrey Pine/ Mtn. Shrub
<u>Sceloporus graciosus</u> Sagebrush lizard	P	X	-	-
<u>Urosaurus ornatus</u> Tree lizard	P	X	-	-
<u>Charina bottae</u> Rubber boa	P	X	X	-
<u>Coluber constrictor</u> Racer	P	X	X	-
<u>Pituophis melanoleucus</u> Gopher snake	P	X	X	X
<u>Thamnophis elegans</u> Western terrestrial garter snake	P	X	X	-
SPECIES (6 spp)		6	4	1

Oecetis PR Y

Genus	Species	FPG	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
COLEOPTERA																	
Dytiscidae	adult	PR					X									X	X
Lara	avara								X								
Narpus	larvae	CG		X													
Optioservus	larvae	SC	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Optioservus	adult	SC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ordobrevia	nubifera	CG				X			X	X	X	X			X	X	X
Zaitzevia	larvae	CG	X			X	X	X	X	X	X	X	X	X	X		X
Zaitzevia	adult	CG			X	X	X	X	X	X	X	X	X	X	X		
Eubrianax	edwardsi	SC				X			X								
MISC. DIPTERA																	
Antocha		CG	X		X	X	X	X	X	X	X			X		X	
Dicranota		PR							X								
Hexatoma		PR		X			X										
Ceratopogonidae		PR									X						
Simuliidae	pupae	CF														X	
Prosimulium		CF														X	
Simulium		CF	X		X			X	X	X	X	X	X	X	X	X	X
Empididae	pupae	PR											X	X			
Hemerodromia		PR					X				X			X			
Atherix		PR	X		X	X		X	X	X	X						
Maruina													X				X
CHIRONOMIDAE																	
Chironomidae		OM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

FPG=Functional feeding group

PR= Predator

PA= Parasite

CG= Collector-Gatherer

CF= Collector-Filterer

OM= Omnivore

PH= Piercer-Herbivore

MH= Macrophyte-Herbivore

SC= Scraper

SH= Shredder

UN= Unknown

EXHIBIT 2

OF THE WILDLIFE HABITAT MITIGATION
AND MANAGEMENT PLAN

EXHIBIT 2

OF THE WILDLIFE HABITAT MITIGATION AND MANAGEMENT PLAN

PROPOSED
SAGE GROUSE MITIGATION

for

Lassen Gold Mining, Inc.

by

Bio-Resources, Inc.
135 East Center St.
Logan, UT 84321

The presence of sage grouse leks (display grounds) at the proposed site of Lassen Gold Mining Inc.'s (LGMI) heap leach pad and mill tailing pond at Hayden Hill necessitated weighing a number of different factors concerning grouse survival. First, a search of Hayden Hill and Silva Flat Basin in spring found no other active leks nor did subsequent searches find more than 32 birds (12 males, 20 females and young) using the pastureland and pond in Section 1. Second, based on observations by a local rancher and information provided by California Fish and Game, the grouse population in the area is declining. The current 4 year drought has taken its toll as has livestock grazing. The only habitat that provides a food source for broods is the alfalfa and forbs in Section 1's pasture and the pond's tailwaters. Third, the grouse at Hayden Hill are isolated from other known populations and are not subject to recruitment. This isolated population may be moving toward local extirpation regardless of any mining activity. Nevertheless, loss of the leks will hasten the population's demise.

Based on site visits in March, April, June, July and August, the limiting factor for population expansion appears to be brood rearing habitat. Critical winter range in Upland Shrub on Summers Hill south of Hayden Hill, nesting habitat in Low Sagebrush throughout the basin, and past use of alternative leks south of the current leks (as reported by a local rancher and California

Fish and Game) are not limiting. This does not mean that the loss of the currently used leks in Section 1 would be of minor consequence. It does suggest that the grouse are flexible in the use of leks and that food resource may play a major role in lek location. The grouse are now concentrated in one area for breeding, brood rearing and winter roosts; nesting may be widespread throughout the Low Sagebrush habitat.

Grouse mitigation will concentrate on two aspects: breeding and brood rearing. An attempt will be made to lure grouse cocks to a new lek in Section 2 located west of the current leks in Section 1. This will be accomplished by selection of habitat similar to Section 1's leks, clearing the new area of sagebrush if necessary, and seeding the area with a lure crop of alfalfa. During the pre-laying period, females seek out green succulent forbs and are often seen feeding as they depart the strutting ground. Thus, a food source on or near the lek is an attractive characteristic of strutting habitat. From March 1 through April 20, 1991, a battery-operated tape player with a continuous play tape of sage grouse mating calls will broadcast through 2 or 3 speakers for 3 hours beginning 1 hour before sunrise and for 1.5 hours beginning 1 hour before sunset. Although sound appears to be the lead attractant in recruiting grouse to a new display ground, a few silhouette decoys of displaying males may be employed. Initially, grouse activity will be monitored on a daily basis. After 7 days of daily monitoring, activity will be monitored every other day for 14 days and as the weather improves on a 3 day rotation until April 20th.

The criteria for success will be repeated attendance on the new lek by 1-5 young cocks and confirmed breeding of 1-10 hens. It is doubtful that the older cocks will use the new lek and success will depend on availability of young cocks for recruitment. The lure program will continue for at least one more year (1992). Data collected will include grouse use of both leks in

Section 1 and the new lek, and will be compared to California Fish and Game's lek counts in Big Valley and Grasshopper Valley. Lek use will be monitored for the duration of mining activity in a manner to be arranged with all concerned parties.

The second step in grouse mitigation is providing more brood rearing habitat which translates into an increase in food resource through the summer months. To achieve this goal a small amount of water will be diverted from the proposed Bunselmeier Spring water pipeline south onto Section 2. The water will be used to promote forb growth north of the new lek depending upon response or use by grouse, and will continue throughout the life of the mine. Livestock grazing in the area may or may not cease, but will definitely not increase with the potential increase in forage. Brood rearing habitat use in Sections 1 and 2 will be monitored in August on a schedule agreed upon by all concerned parties.

To account for grouse distribution and population changes in and near Hayden Hill, a winter (February) aerial census will be conducted when snow cover is present as the birds move toward the breeding grounds. This census will be initiated in 1991 and continue on a schedule agreed upon by all concerned parties. One suggested criterion for all monitoring is that two consecutive years of increase in sage grouse numbers in the basin (based on summer and winter counts) will be considered successful mitigation of the loss of sage grouse leks, nesting, and brood-rearing habitat. Maintenance of current population levels will require continued monitoring. Extirpation will require negotiations between LGMI and concerned parties.

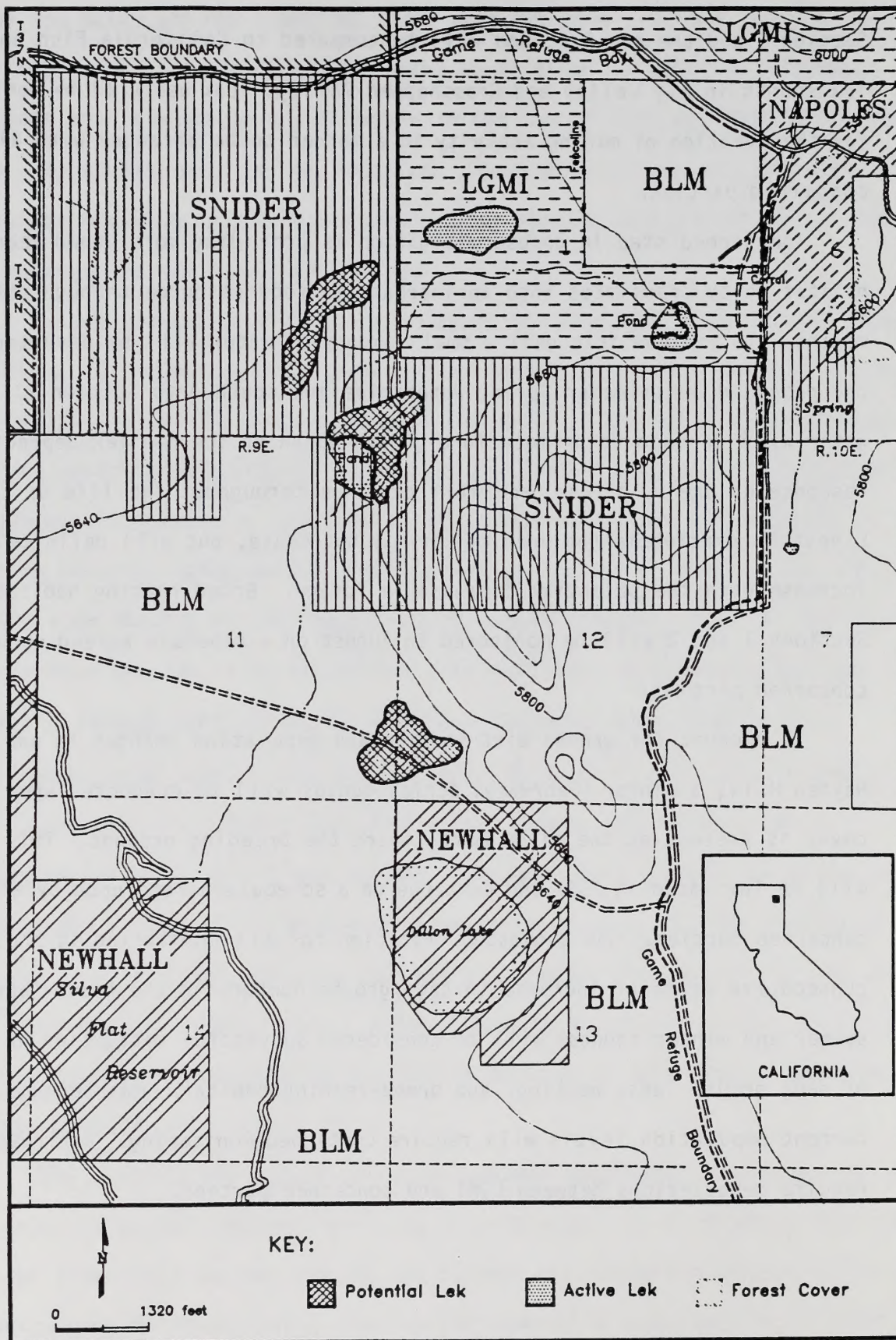


Figure 4. Location of active and potential Sage Grouse Leks and land ownership at Hayden Hill, Lassen County, California.

Reactive Remediation of Sage Grouse (*Centurus urophasianus*)

in Hayden 498, Lassen County, California

Submitted to:

Jeffrey S. Wells
Lassen Gold Mining, Inc.
P. O. Box 1075
Susanville, CA 96130

EXHIBIT 3

OF THE WILDLIFE HABITAT MITIGATION AND MANAGEMENT PLAN

Site Remediation, Inc.
135 East Center St.
Logan, UT 84301

and

Robert L. Eng, Ph.D.
Department of Biology
Montana State University
Bozeman, MT 59717

June, 1991

Passive Relocation of Sage Grouse (Centrocercus urophasianus)

at Hayden Hill, Lassen County, California

Submitted to:

**Jeffrey S. White
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P. O. Box 1028
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Submitted by:

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and

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June, 1991

INTRODUCTION

A proposed gold mine at Hayden Hill, Lassen County, California, would disrupt two sage grouse (Centrocercus urophasianus) leks, one located in the northwest quarter of Section 1 (T36N R9E) and the other in the southeast quarter of Section 1. During the preparation of an Environmental Impact Report (EIR) and an Environmental Impact Statement (EIS) for Lassen County, and the U.S. Bureau of Land Management (BLM), Lassen Gold Mining, Inc. (LGMI) of Susanville, California, supported a research effort to passively relocate the grouse to a new lek outside the area of mining influence. Although sage grouse are known to consistently return to an exact lek location year after year (Wiley 1978), Eng. et al. (1979) successfully directed yearling or subadult males and subsequently hens to a new lek two miles distant from the old.

HISTORICAL and BIOLOGICAL PERSPECTIVE

Sage grouse in California occur along the state's eastern border from the Oregon state line to the north and Mono and Inyo Counties to the south. Most of Modoc and Lassen Counties contain appropriate grouse habitat including a western-most extension into Shasta and Siskiyou Counties (Leach and Hensley 1954). With currently declining populations grouse hunting occurs only in eastern Lassen and Mono Counties and in northern Inyo County according to California Department of Fish and Game (CDFG) 1990 hunting regulations.

Sage grouse populations are declining in the West due to a loss of sagebrush habitat (Braun et al. 1977). Sagebrush (Artemisia sp.) leaves are a dietary requirement for the grouse and the shrub itself provides location for most nests, visual cover during daily and seasonal movements, and protection from weather. Sagebrush control, i.e., loss of habitat due to spraying, burning, construction, etc., requires an expert

assessment of the grouse population and, where loss is inevitable, implementation of land management practices to mitigate adverse effects Braun et al. (1977) suggest no habitat be disturbed within a 3 km radius of an occupied lek.

In the case of the sage grouse near Hayden Hill, two leks will be lost to facilities construction as well as 355 acres of nesting habitat, and 48 acres of brood-rearing habitat. Lek and nesting habitat occurs in Low Sagebrush (Artemisia arbuscula) vegetation type which is common in the area (Figure 1). Cover values and perennial density for nesting habitat (Low Sagebrush), brood-rearing habitat (Pasture) and critical winter habitat (Big Sagebrush; Artemisia tridentata) are presented in Table 1 and species importance in Table 2. The amount of habitat lost to construction and operation totals 403 acres of lek/nesting habitat and brood-rearing habitat. No critical late winter habitat will be affected, i.e., Big Sagebrush on Summer's Hill.

California Department of Fish and Game personnel (F. A. Hall, Associate Biologist, personal communication 1990) suggested there were two leks in the Silva Flat-Hayden Hill area, one near Hayden Hill and another in the center to NW quarter of Section 11 (T36N R9E) northeast of Silva Flat Reservoir (Figure 2). A local rancher (M. Snider, personal communication 1990) noted that dancing males were regularly seen near the junction of Sections 11, 12, 13 and 14 north of Dillon Reservoir. Surveillance in March 1990 throughout the Hayden Hill/Silva Flat area, i.e., a 3 mile radius of Section 1 did not find additional sage grouse breeding activity in the Low Sagebrush (approx. 6196 acres) of Silva Flat basin (Figure 1). Dillon Reservoir and the area around Silva Flat Reservoir were checked during the day for sign and at dawn for strutting activity with no indication of recent activity. The impression gained from conversations with local ranchers (M. Snider, J. Peaks, personal communication 1991) was that in previous years birds had been observed in "greater numbers" than observed in 1990. Finding other leks in the immediate area essentially isolated this population from known

leks in Grasshopper Valley to the southeast and Ash Creek to the northwest. (There is, however, a possibility of movement between Grasshopper Valley through a connecting corridor of Long Flat and Walton Meadow, approximately 8 miles distance.)

During spring 1990, a small population of 9-10 adult male sage grouse displayed alternately on two arenas approximately one-quarter mile apart, both in Section 1 (Figure 2). The northwest arena in Low Sagebrush on a very flat area, is called the Flat Lek (2), and covers 18 acres (Figures 3a,b). The other arena was in the drawdown area of a stock pond, is called the Pond Lek, and covers 4 acres (Figure 4). Although the birds displayed more consistently at the Pond through mid-April, the strutting ground in the Flat showed signs of having received greater use during spring 1990 (regular and caecal droppings, feathers, tracks and condition of the vegetation). This site also gave an overall appearance of a more "typical" sage grouse strutting ground in relation to unobstructed visibility and surrounding sagebrush cover.

In 1990 no more than 10 adult males displayed at the Pond and Flat leks; 3-4 subadult males displayed individually near the Flat in satellite leks. Fourteen females were observed at the Pond and 4 females at the Flat. Small groups of males and females were also seen once at Snider's Pond Waterhole to the west and at Dillon Reservoir to the south with one male displaying at the former location. Low Sagebrush was summer and winter range for the grouse and Big Sagebrush on Summers Hill (approx. 640 acres) south of the mine was crucial late winter range.

Clusters of droppings indicative of winter or late spring roost sites were common among openings in Big Sagebrush on Summer's Hill in Sections 1 and 12. Increased use during winter of sagebrush stands with greater density and height has been shown to occur in other areas, particularly when snow covers some of the shorter plants (Eng and Schladweiler 1972, Wallestad 1975). These "critical areas" often represent a small

part of the overall wintering area of a group of grouse but may be very important during periods of heavy snow cover (Wallestad 1975). With the few grouse that make up the present population of the area, and the amount of droppings present in Section 12, it would appear that the grouse spent most of last winter (1990-1991) in the area. This would indicate that at least during some winters, this population does not engage in extensive seasonal movements (Berry and Eng 1985) and, under the current land uses, can find year long habitat requirements in the area.

Two other areas in which a local rancher (M. Snider, personal communication 1990) reported commonly sighting sage grouse in the summer and fall were in a seeded dryland pasture (approx. 50 acres) in Section 1 and near a spring along the road which parallels the east boundary of Section 11. Both the Pasture and the spring area would contain succulent plants sought out by young and adult sage grouse during the drier times of the year (Peterson 1970, Wallestad et al. 1975).

During a late summer search (Aug. 1990), 32 grouse (12 adult males and a second group of 20 adult females and young) were seen feeding in the Pasture near the pond in Section 1. The only succulent foods available for broods in July and August were the alfalfa and other forbs in the Pasture in Section 1 and the pond's tailwaters. The current interchange between leks suggested that the grouse were flexible in the use of leks and that food resource (available at the pond) played the major role in lek location. The grouse are now concentrated in one area for breeding, brood-rearing and winter roosts, while nesting is within a 2-3 mile radius of the leks throughout Low Sagebrush.

The discovery of the occupied leks in Section 1 led CDFG personnel (F. A. Hall, personal communication 1990) express concern about potential extirpation of the population as a result of proposed mining activity. LGMI developed a research proposal to passively establish a new lek to the west in Section 2 (Figure 2) using Eng et al's

(1979) technique. This technique involved using auditory (male calls) and visual (male and female decoys) stimuli to attract subadult males to a new lek. CDFG preferred off-site mitigation, i.e., acquisition and protection of sage grouse habitat elsewhere in northeastern California eliminating any LGMI liability for grouse loss in the Hayden Hill area. LGMI proposed to establish a new lek over a two year period while monitoring grouse populations, then implement other mitigation, if necessary, when more data were available to assess population status.

A five year drought and extensive livestock overgrazing in the area may already have contributed to a significant and irreversible decline of this population. A nearby property owner (L. Newhall, personal communication 1991) counted at least 60 grouse east of Summer's Hill on the snowpack in February 1990. Only half that number was observed in August 1990.

METHODS AND MATERIALS

Following the lead of Eng et al. (1979), during November 1990, a new lek site was selected in Section 2 (Figure 2) and the potential arena cleared of a few scattered Artemisia arbuscula. The size of the arena was 0.17 ha (0.4 acre) (Figure 5). Although agreement by CDFG to conduct the research was not forthcoming and did not reach us until after project initiation, a control unit of a Craig Model T738 auto-reverse cassette player, a 40W Consumer Technology preamplifier, a Real Goods 12V timer, two 12 volt deep dwell batteries, two Consumer Technology waterproof outdoor speakers and 150 ft coaxial cable were assembled and placed on the arena's eastern boundary on March 3, 1991 (Figures 6a, b, c). Recorded calling and dancing by sage grouse males from a large lek in Wyoming (2.5 minutes) was rerecorded continuously on a 40 min Maxell cassette tape by KUSU-FM at Utah State University, Logan UT. Fourteen decoys were deployed in the arena in a lek configuration (Figure 7).

On March 6, 1991 daily observation of the new lek (3), the Pond (1) and Flat (2) leks was initiated. The Pond (1) was observed twice every hour and the Flat and new lek four times per hour on a 15 min rotation. Observation was done from a vehicle in order to keep human interference at a minimum and observation points were located along farm roads near the leks. Observations were made daily through April 21 for a total of 44 days using binoculars and a 30x spotting scope. On March 14, 17, and 21 when snow prevented access to Hayden Hill, no observations were made. Data (Figure 8) were recorded by plotting the location of any grouse on a 7.5 min USGS map of the area. Each location was numbered and number of grouse, age, sex, behavior, time and date were recorded in a computer-compatible fashion. Observations began at approximately 0600 hr each day and continued until 0900 hr-1000 hr or when activity ceased. Recorded calls began broadcasting 1 hr prior to dawn for 4 hrs and 0.5 hr prior to sunset until 0.5 hr after sunset. The maximum number of grouse at any site during daily observations comprised the data point used in this analysis.

RESULTS

Lek attendance averaged 2 adult males at the Pond (1), 3 adult males in the Flat (2), and no male or female sage grouse at the new lek (3) (Table 3). A coyote (Canis latrans) did attack the decoys and one of the speakers at the new lek. One subadult male accompanied the adult males throughout the observation period and on only one occasion (12 March) was a second subadult observed. Most females occurred at the Pond (1) with only one female observed in the Flat (2). During a total of 44 days of observation grouse were active at the pond for 39% of the time and flat for 34% of the period. Snow stopped all grouse activity from mid to late March (Figure 9). During this period either no grouse were seen or males would fly off Summer's Hill into Big Sagebrush

between pastures in Sec. 1 (Figure 1), but would not display. Adult female attendance peaked on 3 and 4 April as the snow storm abated.

Initially seven males (one subadult) attended the leks with a definite preference for the Flat. As the snow lessened and melted in late March male use switched to the Pond with only 3 adult males and one subadult male present for the remainder of the observation period. By 17 April no more females occurred at any lek and male attendance was low and sporadic. Peak attendance was 18 birds at the Pond (4 males, 14 females) and 2 males at the Flat on 3 April. After that date, no more than 3 females were seen at the Pond at any one time through 16 April and only one was observed at the Flat throughout the entire season.

Males displayed at two other sites (Figure 2), one west of a cabin and ponds (4) on 3 occasions and one south of the Flat at (5) in relatively dense sagebrush when snow still covered the ground. Neither of these arenas were attended by females. Overall, 20 grouse appeared to survive the winter with a loss of at least 1 male during breeding. One adult male was lost to a predator and a second subadult male was seen only once.

DISCUSSION

The heavy and consistent snow storms disrupted breeding and led to a short but not uncommon peak in female attendance (Jenni and Hartzler 1978). Although male grouse preferred the Flat (2), females preferred the Pond (1). Males definitely moved between leks. The absence of males at the new lek (3) may have been due to the lack of potential recruits. Adult males have a virtual unbending fidelity to the lek on which they first established. Thus the potential for initiating a new lek rests with the more flexible, uncommitted subadults. Early in the 1991 breeding season (March 12) two subadults were observed, but soon after only one was observed and it as a constant companion of the adult males. Thus virtually no recruitment base for initiating a new lek existed in the Hayden Hill population in 1991.

Based on current available data for this population, it would appear to have a questionable future regardless of land use in the area. If this is a migratory population, trend counts on individual leks are less reliable than those obtained from a complex of display areas since there is more interchange of males between leks than is found in a non-migratory population (Dalke et al. 1960). However, areas where grouse were reported to have displayed in the past were without birds in 1991 which further suggests an overall downward trend in the area.

MANAGEMENT RECOMMENDATIONS

An attempt to direct males to a new lek in 1992 will be dependent on recruitment and winter survival. It is suggested that a count be made in the Pasture in July and August 1991 and another count be made in February 1992 if a snowpack is present. An inventory in July and August should provide some insight into the success of the breeding season. The grouse will likely be concentrated on moist habitats with succulent vegetation which would decrease the amount of area needing surveillance and increase the efficiency of the effort. Even so, the apparent low density of grouse may make locating broods difficult.

If a good snowpack is present in the winter of 1991-92 the presence and approximate numbers of sage grouse wintering in the area could be determined in a relatively short time by systematic aerial coverage of the area with a fixed wing aircraft. This effort could also provide some insight into the resident or migratory status of this population, information critical to the management of the birds but currently unavailable.

LGMI's management of livestock grazing in Section 2 for the life of the mine plus establishing new brood-rearing habitat in Sec. 2 is likely to assist this population.

More widely dispersed brood rearing areas would certainly reduce the opportunity for predators to make inroads into the population. Whether loss of the Flat will adversely affect the population remains to be seen; past use of the Pond suggests breeding will continue whether the Flat is available or not. Mine construction will not eliminate the Pond for at least two years, and traffic will be routed north of the Pond lek for this period. An additional alternative concerns transplanting subadult grouse in the area; this will be further investigated if the above actions do not prove fruitful. New brood-rearing habitat will be created in Section 2 and passive relocation efforts will continue. The goal is to establish and enhance a viable sage grouse population in the Silva Flat/Hayden Hill area and eliminate off-site mitigation favored by CDFG.

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Table 1. Cover values of annual and perennial flora, density of perennials, species richness, and species diversity of three vegetation types at Hayden Hill, Lassen County, California during June 1989 and July 1990.

	Vegetation Types		
	Cover, %		
	Low Sagebrush	Big Sagebrush	Pasture
	n = Min Sample Size 40 22	16 15	20 4
<hr/>			
ANNUALS and PERENNIALS			
VEGETATION	30 ± 22	34 ± 21	42 ± 14
LITTER	21 ± 12	32 ± 24	34 ± 14
BARE GROUND	16 ± 12	32 ± 26	21 ± 11
ROCK	33 ± 23	38 ± 21	3 ± 5
Number of species, n	7 ± 2	4 ± 1	4 ± 1
Species Diversity, H'	1.41 ± 0.50	1.16 ± 0.25	0.80 ± 0.37
<hr/>			
PERENNIALS			
	DENSITY, Number/0.25 m ²		
VEGETATION	14 ± 9	12 ± 5	9 ± 4
Number of species, n	3 ± 1	4 ± 1	2 ± 1
Species Diversity, H'	0.88 ± 0.33	1.11 ± 0.34	0.47 ± 0.34

Table 2. Rank of perennial flora by frequency, cover and density for three vegetation types at Hayden Hill, Lassen County, California during June 1989 and July 1990.

Vegetation Type	Frequency, % (Rank)	Cover, % (Rank)	Density, #/0.25m ² (Rank)
SLOPE: 0-5%			
Low Sage Brush			
<u>Poa secunda</u>	90 (1)	4 (2)	7 (1)
<u>Artemisia arbuscula</u>	60 (2)	16 (1)	<1 (4)
<u>Sitanion hystrix</u>	35 (3)	<1 (5)	<1 (5)
<u>Haplopappus stenophyllus</u>	30 (4)	1 (3)	1 (3)
<u>Trifolium macrocephalum</u>	18 (5)	<1	<1
<u>Antennaria flagellaris</u>	10	<1	2 (2)
<u>Eriogonum sphaerocephalum</u>	2	<1 (4)	<1
Pasture - eastern portion			
<u>Medicago sativa</u>	90 (1)	28 (1)	7 (1)
<u>Agropyron intermedium</u>	45 (2)	1 (4)	<1 (2)
<u>Wyethia mollis</u>	20 (3)	2 (3)	<1
<u>Lomatium sp.</u>	20 (4)	<1	<1 (5)
<u>Crepis modocensis</u>	10 (5)	<1	<1 (4)
<u>Lupinus caudatum</u>	5	<1 (2)	<1
<u>Poa sp.</u>	5	<1 (5)	<1
<u>Sitanion hystrix</u>	10	<1	<1 (3)
Big Sagebrush			
<u>Poa secunda</u>	94 (1)	8 (2)	6 (1)
<u>Festuca idahoensis</u>	81 (2)	9 (1)	2 (2)
<u>Artemisia tridentata</u>	75 (3)	7 (3)	<1
<u>Astragalus sp.</u>	44 (4)	1	1 (4)
<u>Sitanion hystrix</u>	38 (5)	2 (5)	1 (3)
<u>Lupinus sp.</u>	38 (5)	1	1 (5)
<u>Purshia tridentata</u>	31	5 (4)	<1

Table 3. Sage grouse attendance at old and new leks during March-April 1991 near Hayden Hill, Lassen County, California. (see Figure 2 for lek locations.)

Lek Attendance	Sage Grouse Leks				
	1 Pond	2 Flat	3 New	4 Munkoff	5 S of Flat
Adult males	2.4±0.7	2.8±1.4	0	2.3±1.5	5
Subadult males	1.0±0	1.5±0.7	0	0	1
Females	4.0±4.5	1	0	0	0
Attendance, Days (%)	17 (39)	15 (34)	0 (0)	3 (7)	1 (2)
Males only, days (%)	9 (21)	14 (32)	0 (0)	3 (7)	1 (2)
Males/females, days (%)	7 (16)	1 (2)	0 (0)	0 (0)	0 (0)
Females only, days (%)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)
No Attendance, Days (%)	27 (61)	29 (66)	44 (100)	41 (43)	43 (98)



Figure 1. General vegetation types in the vicinity of Hayden Hill, Lassen County, California.

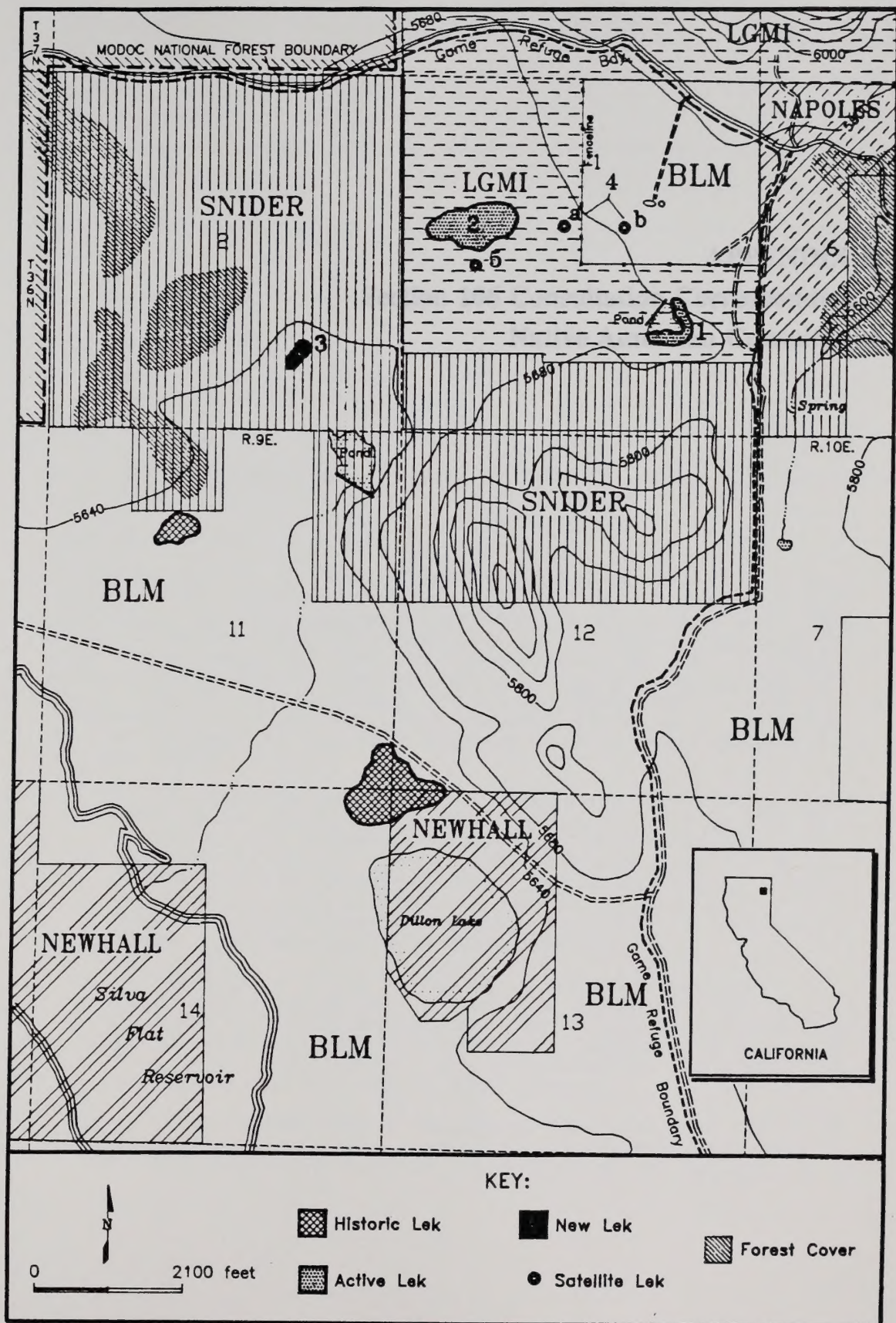


Figure 2. Location of active, new, and potential Sage Grouse Leks and land ownership at Hayden Hill, Lassen County, California.

Advisory
Council On
Historic
Preservation

Penner

Washington, D.C.
20540-0001
Tel: 202/690-1000

Box 10
Washington, D.C.
20540-0010

April 19, 1997

APPENDIX H

**Section 106 Consultation Correspondence;
Native American Consultation**

Mr. Ed Taylor
State Director
Division of Land Management
California State Office
2000 Cottage Way, Room 2-010
Sacramento, CA 95833-1000

Re: Mr. Taylor's letter

Re: Taylor's letter dated May 19, 1997, to the State Office, California

Dear Mr. Taylor:

On April 17, 1997, we received your letter of advice about the data recovery (recovery) plan, and the SHPO's comments and conclusions for the recovery project. In accordance with the terms of the 1996 FCR, we agreed with the conditions presented in the SHPO's letter of April 17, 1997, and offer the following comments regarding the data recovery plan and its implementation. These comments are intended for your use, the SHPO's, and the contractor's consideration. They are not intended as an objection to the adequacy of the data recovery plan, or any finding of adverse effect.

1. The comment made in the explanation of the conditions under which structures, features and sites are evaluated for eligibility as presented at Chapter 3-4 through 3-10. As currently presented, these conditions and comments may draw out the longer and often may be willing to accept. For example, eligibility does not require absolute purity, but rather enough purity of integrity to retain a prehistoric quality that demonstrates cultural significance.

2. In Chapter 3, the conditions under which various hypotheses could be rejected were to depend on the reliability of sampling efforts. The absence of evidence does not necessarily equate with evidence of absence. We recommend that data requirements for acceptance of rejection of hypotheses be clarified and strengthened.

3. What is the fate of the Taylor Hill Cemetery? Is it to be destroyed? Although the data recovery plan indicates it is not, we recommend eligible for listing on the Register of

Advisory
Council On
Historic
Preservation

Resource

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

Reply to: 730 Simms Street, #401
Golden, Colorado 80401

April 19, 1991

Mr. Ed Hastey
State Director
Bureau of Land Management
California State Office
2800 Cottage Way, Room E-2845
Sacramento, CA 95835-1889

ATTN: Mr. William Olsen

REF: Proposed Hayden Hill Mining Project in Lassen County,
California

Dear Mr. Hastey:

On April 12, 1991, we received your finding of adverse effect, the data recovery (treatment) plan, and the SHPO's comments and conditions for the referenced project. In accordance with the terms of the 1986 PMOA, we concur with the conditions presented in the SHPO's letter of March 13, 1991, and offer the following comments regarding the data recovery plan and its implementation. These comments are intended for yours, the SHPO's, and the contractor's consideration. They are not intended as an objection to the adequacy of the data recovery plan or your finding of adverse effect.

1. We recommend caution in the application of the conditions under which structures, features and sites are evaluated for eligibility as presented at Chapter 2-6 through 2-14. As currently presented, these conditions and constraints may exceed what the Keeper and others may be willing to accept. For example, integrity does not require absolute purity, but rather enough purity of integrity to retain a preservable entity that communicates relevant significance.

2. In Chapter 3, the conditions under which various hypotheses would be rejected seem to depend too much on the reliability of sampling efforts. The absence of evidence does not necessarily equate with evidence of absence. We recommend that data requirements for acceptance or rejection of hypotheses be clarified and strengthened.

3. What is the fate of the Hayden Hill Cemetery? Is it to be destroyed? Although the data recovery plan indicates it is not considered eligible for listing on the Register as a

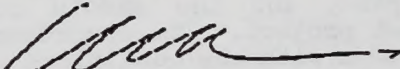
district eligible. Aside from its obvious associations with the historic values of the District, does the presence of human remains suggest the potential for important information

about population dynamics or pertinent to the data requirements of other questions and hypotheses posed in the plan?

4. The data recovery plan does not provide a justification for the total number of units targeted for excavation. Unless the excavation effort is linked to the data requirements of the research questions and hypotheses, we have no way of assessing whether the estimated >400 one-meter units are reasonable.

Thank you for providing us the opportunity to comment on this undertaking. If you have questions, please contact Alan Stanfill at (303) 231-5320 or FTS 554-5320. We would appreciate being informed as to whether our comments result in any changes to the proposed plan, and what those changes are.

Sincerely,



Claudia Nissley
Director, Western Office
of Project Review

OFFICE OF HISTORIC PRESERVATION

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 942896

SACRAMENTO 94296-0001

(916) 445-8008

FAX: (916) 322-6377

March 13, 1991

Mr. Herrick E. Hanks, District Manager
 Susanville District Office
 U.S. Bureau of Land Management
 705 Hall Street
 SUSANVILLE CA 96130

Re: Proposed Hayden Hill Mining Project in Lassen County

Dear Mr. Hanks:

Thank you for clarifying the issues raised in our previous letter of January 31, 1991. Our understanding of the revised Area of Potential Effect for the proposed undertaking indicates that we have already agreed on determinations of National Register eligibility for the cultural resources found there. Other resources identified in WCRM's historic property inventory for the undertaking lie outside of the revised APE.

We concur in your determination of adverse effect for the Hayden Hill Mining Project subject to implementation of the terms specified in WCRM's (December 27, 1990) Hayden Hill Data Recovery Plan and your agreement to carry out the following actions:

1. In telephone conversations with Don Manuel of your staff and Gerry Gates of the Modoc National Forest we learned that the Hayden Hill Fire Lookout (CA-LAS1429H) will be rebuilt on property adjacent to the Beiber Museum in Big Valley rather than at Henski Reservoir. We consider your plans to conduct HABS recordation of the lookout, dismantle and temporarily store it, and then rebuild it at the Beiber Museum acceptable as a way to account for the adverse effect of your undertaking on that National Register eligible property. HABS recordation requirements should be determined in consultation with the National Park Service staff who maintain HABS records, with copies of the completed records sent to our office when completed. Storage of the dismantled building must be in a secure facility protected from the elements. The fire lookout must be reconstructed within two years of being dismantled. Reconstruction shall be according to its current design.
2. A curation agreement will be made with an repository acceptable to the BLM, our office, and the project sponsor prior to initiating any data recovery work.
3. As stated in WCRM's Data Recovery Plan (p.5-19), our office will have 30 days from receipt of a draft data recovery report to review and comment.

It is our understanding based on telephone conversations among my staff, Gerry Gates (Modoc National Forest Archaeologist), and Daniel Foster (California Department of Forestry Archaeologist) that those agencies are in agreement with the conditions specified above.

March 13, 1991
 RANGER
 RANGE COM
 REPLY TO: BLM900709A
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 WILDLIFE MGNT

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DIST MGT
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 TURAS OFFICE
 SUSANVILLE OFFICE

1 Information
 2 Legal Action



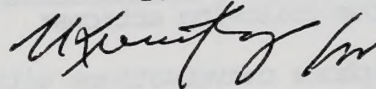
Herrick E. Hanks
March 13, 1991
Page 2

Under the terms of an existing Programmatic Agreement among the BLM's California Office, our office, and the Advisory Council on Historic Preservation, we agree a separate Memorandum of Agreement is not required for this undertaking as a way to take its effects into account. Pursuant to the PA, you should now seek the Advisory Council's comments on your determination of effect, Data Recovery Plan, and the comments provided in this letter.

You may have additional responsibilities pursuant to Section 106 and its implementing regulations (36 CFR 800) under the following circumstances: (1) If any person requests the Advisory Council on Historic Preservation to review your determination in accordance with 36 CFR 800.6(e); (2) if the undertaking changes in ways that could affect historic properties (36 CFR 800.5[c]); (3) if historic properties are discovered during implementation of this undertaking or if a known historic property will be affected in an unanticipated manner (36 CFR 800.11); (4) if a property that was to be avoided has been inadvertently or otherwise affected (36 CFR 800.4[c] and 800.5); or (5) if any condition of the undertaking, such as a delay in implementation or implementation in phases over time, may justify reconsideration of the current National register status of properties within the undertaking's Area of Potential Effects (36 CFR 800.4[c]).

Thank you for considering historic properties during project planning. If you have any questions regarding our review of this project, please contact Thad Van Bueren of our staff, at (916) 322-9610.

Sincerely,



Kathryn Galtieri
State Historic Preservation Officer

cc: Gerry Gates, Modoc National Forest
William Olsen, BLM (Sacramento)
Daniel Foster, California Department of Forestry
Claudia Nissley, Advisory Council on Historic Preservation

RECEIVED

MAR 21 1991



OFFICE OF HISTORIC PRESERVATION
 DEPARTMENT OF PARKS AND RECREATION
 P.O. BOX 942896
 SACRAMENTO 94296-0001
 (916) 445-8006
 FAX: (916) 322-6377

REPLY TO: BLM900709A

January 31, 1991

Mr. Herrick E. Hanks, District Manager
 Susanville District Office
 U.S. Bureau of Land Management
 705 Hall Street
 Susanville, CA 96130

Re: Proposed Hayden Hill Mining Project in Lassen County

Dear Mr. Hanks:

Thank you for requesting our comments on the supplementary information provided in your latest transmittal. We have carefully reviewed all of the data we now possess and would like to comment on various aspects of your Section 106 compliance efforts for the cited undertaking. Given the wide array of concerns we have expressed in previous letters, we feel it is important to begin by clarifying our points of agreement.

We agree that you have made reasonable efforts to identify historic properties in the Area of Potential Effect delineated in Figure 2 of the Access Corridor Class III Inventory Report by WCRM (May 9, 1990). Your inventory methods are consistent with the Secretary of the Interior's Standards and Guidelines and satisfy us that you have met the requirements of 36 CFR 800.4(a and b). The only data we still lack are permanent site trinomials for sites USFS 05-09-54-115, -144, -385 through -390, and -412, ES-2 through 12, RM-1, and TL-1 through 8.

In our previous correspondence we agreed that sites CA-IAS-1400/H, -1408, -1414, and -1421 are not eligible to the National Register. Based on the detailed historic context and research framework outlined in WCRM's (December 27, 1990) Hayden Hill Data Recovery Plan we now feel that adequate support has been provided for several additional National Register eligibility determinations. We concur that sites CA-IAS-431H, -432H, -1416H, and -1429H are eligible properties. We also concur with your finding that sites CA-IAS-1399H, -1425H, and the historic components at sites CA-IAS-1402/H and -1420/H are ineligible. Because the data potential of the historic components at sites CA-IAS-1407/H and -1418/H has been exhausted, we feel they do not qualify for inclusion in the National Register.

We consider your National Register determinations for all of the other cultural sites and site components in the APE inadequately justified in the documents we have examined to date. This includes all of the sites for which we still lack trinomials, as well as other properties not listed in the preceding paragraph. Pending receipt of further supporting documentation, we must object to the eligibility findings you have made for these resources.

Most of the underevaluated resources in the APE consist of lithic scatters. As we understand it, only three lithic scatters in the APE have been systematically sampled. While some surface specimens were collected

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SUSANVILLE DISTRICT

FEB 5 '91

Don

DIST MGR

PLANNING

PIO

RECORDS

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OPER

EAGLE LAKE OFFICE

FURNAS OFFICE

CORPSE OFFICE

NOTICE

at other lithic scatters during the inventory, horizontal patterning has not been systematically examined with surface observation units, lithic reduction patterns remain poorly analyzed, and no obsidian sourcing and hydration studies have been reported. Without more thorough attention to such matters we find it difficult to assess how each resource may or may not be able to contribute to our understanding of the research issues posed in the prehistoric research design.

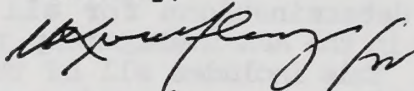
We have suggested on several occasions that you refer to our publication California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (OHP 1988) for guidance concerning the evaluation of the lithic scatters in the undertaking's APE. While we encourage you to resolve the issue of the National Register eligibility of the remaining cultural properties in the APE, we will not insist on their evaluation prior to closure of Section 106 consultations for this undertaking if you can provide reasonable guarantees that the unevaluated sites will not be affected by the undertaking. We will need to review the specific avoidance procedures you plan to use if you choose not to complete the evaluations of these resources. You also have the option of requesting a formal determination of eligibility from the Keeper of the National Register.

The data recovery you have proposed for eligible properties within the Hayden Hill APE is generally reasonable and well justified in relation to the values which contribute to their eligibility. However, we will need written clarification on the matters described above and the details of where and how the Hayden Hill Fire Lookout (CA-IAS-1429H) will be relocated before we can agree with a finding of effect for this undertaking. We will also need the written opinions of the Forest Supervisor for the Modoc National Forest and the Deputy Director of Resource Management at the California Department of Forestry in Sacramento concerning aspects of the undertaking that will affect those agencies.

We will resume our review of this undertaking when we receive further documentation from you. Following resolution of the matters outlined above you will need to supply pertinent documentation to the Advisory Council on Historic Preservation for their comment pursuant to Stipulations 7 and 8 of our Programmatic Agreement.

Thank you for considering historic properties during project planning. If you have any questions regarding our review of this project, please contact Thad Van Bueren of our staff, at (916) 322-9610.

Sincerely,



Kathryn Gualtieri
State Historic Preservation Officer

cc: Gerry Gates, Modoc National Forest
William Olsen, BLM (Sacramento)
Daniel Foster, California Department of Forestry

Claudia Nissley
Advisory Council on Historic Preservation
730 Simms Street, #450
Golden Colorado 80401

Re: Proposed Hayden Hill Mining Project in Lassen County,
California

Dear Ms Nissley:

The Hayden Hill Gold Mining Project encompasses some 1,054 acres of both Public(BLM and USFS) and private lands. In order to reduce both paper work and simplify project environmental requirements, including section 106 compliance, a Memorandum of Understanding (MOU) was signed between the BLM, the USFS, and Lassen County. Under the terms of the agreement, BLM would take the lead on all cultural resource matters and Lassen County would take the lead in preparing the combination Environmental Impact Report(EIR/Environmental Impact Statement(EIS)). In addition, all project participants agreed to follow the provisions of the statewide PMOA between the Bureau of Land Management, the California State Historic Preservation Officer, and the Advisory Council of Historic Preservation for all cultural matters, regardless of land ownership. The project is located in Lassen County in Northeastern California. A complete project description is included within the attached report and Data Recovery Plan.

The California State Historic Preservation Officer has concurred(letter included) that this project will adversely effect National Register Quality Historic Property(s) subject to the terms specified in the enclosed Data Recovery Plan. All of the stipulations and conditions requested by their office will be met prior to implementation of the mining project.

Under the terms of the existing Programmatic Agreement between our office, the California State Historic Preservation Officer and the Advisory Council of Historic Preservation, we are sending you a copy of the Hayden Hill Data Recovery Plan(December 27, 1990). We request that you concur in our determination of adverse effect for the Hayden Hill Mining Project subject to implementation of the terms specified in the above mentioned report and additional stipulations requested by the California State Historic Preservation Officer.

If you have any questions concerning this submission, please contact Bill Olsen of my Staff at (916)978-4730.

Edward L. Hasty
State Director

DWM
5/16

16 MAY 1990

CERTIFIED MAIL NO. P 115 743 296
RETURN RECEIPT REQUESTED

Mr. Floyd Buckskin
Cultural Resource Coordinator
Pit River Nation
Park Avenue
Burny, CA 96013

Dear Mr. Buckskin:

Lassen Gold Mining, Inc. has filed a plan of operations to mine gold from the Hayden Hill area in Lassen County with the Bureau of Land Management (BLM). Since the project is on both private and public lands, the BLM, Modoc National Forest, and Lassen County have established a joint EIR/EIS process to address the action. The Draft EIR/EIS is scheduled to be available for review this summer, and you are on the mailing list to receive a copy.

Under Federal Regulation (36 CFR 800.2 (iii)) we are required to notify you prior to initiating any project that may concern you. If you have any concerns about this project, please contact Don Manuel of this office within 30 days of receipt of this letter at (916) 257-5381.

Sincerely,

ROBERT J. SHEPHE

for

Herrick E. Hanks
District Manager

cc: Bob Laidlaw, C-931.4
Area Manager, Alturas

DMANUEL:VK
5-10-90:0180M

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(CA-020)

CERTIFIED MAIL NO. P 115 743 295
RETURN RECEIPT REQUESTED

16 MAY 1990

Don Manuel
5/16/90

Mr. Aaron Dixon
Tribal Chairman
Susanville Indian Rancheria
Susanville, CA 96130

Dear Mr. Dixon:

Lassen Gold Mining, Inc. has filed a plan of operations to mine gold from the Hayden Hill area in Lassen County with the Bureau of Land Management (BLM). Since the project is on both private and public lands, the BLM, Modoc National Forest, and Lassen County have established a joint EIR/EIS process to address the action. The Draft EIR/EIS is scheduled to be available for review this summer, and you are on the mailing list to receive a copy.

Under Federal Regulation (36 CFR 800.2 (iii)) we are required to notify you prior to initiating any project that may concern you. If you have any concerns about this project, please contact Don Manuel of this office within 30 days of receipt of this letter at (916) 257-5381.

Sincerely,

Herrick E. Hanks
District Manager

cc: Bob Laidlaw, C-931.4
Area Manager, Alturas

DMANUEL:VK
5-10-90:0180M

**HABITAT MITIGATION AND
MANAGEMENT PLAN
Habitat Mitigation and Management Plan and Wetlands Mitigation Plan
FOR THE
HAYDEN HILL PROJECT**

APPENDIX I

FOR

LASSEN GOLD MINING, INC.
BOX 1028
SUSANVILLE, CA 96130

BY

LYNN SMITH, Certified Professional Wetlands Scientist
ENVIRONMENTAL CONSULTANT
1240 SE 84TH PLACE
BELLEVILLE, OR 97004

September 1997
(P.1-1)

HABITAT MITIGATION AND

MANAGEMENT PLAN

FOR THE

HAYDEN HILL PROJECT

FOR

LASSEN GOLD MINING, INC.

BOX 1028

SUSANVILLE, CA 96130

BY

LYNN SHARP, Certified Professional Wildlife Biologist

ENVIRONMENTAL CONSULTANT

10906 SE 54TH PLACE

MILWAUKIE, OR 97222

September 1991

(91.4)

1. INTRODUCTION

This Habitat Mitigation and Management Plan (HMP) describes in detail the actions that will be implemented to offset the impacts to wildlife anticipated from construction of the Hayden Hill Project, an open pit gold mine employing heap leach and mill processing facilities. These impacts have been described in the Draft Environmental Impact Report/Environmental Impact Statement for the Hayden Hill Project (Steffen, Robertson and Kirsten 1991). This HMP is a part (Exhibit 1) of the "Mitigation Plan," described in the Wildlife and Habitat Mitigation Agreement (WHMA) between Lassen Gold Mining, Inc. (LGMI) and the California Department of Fish and Game (CDFG).

2. PROJECT DESCRIPTION

The Hayden Hill Project will affect 970 acres of land, and includes an open pit from which shallow level gold and silver deposits will be mined. Conventional open-pit mining methods to be used will include drilling, blasting, and a truck/loader operation to extract ore and remove overburden and waste rock. Depending on its grade, the ore will be processed in the mill or on heap leach pads. A large lined impoundment designed for zero-discharge will receive the mill tailings. Ponds containing lethal concentrations of cyanide will be covered with 1-inch mesh netting to prevent wildlife access. All ponds will be fenced. The tailings solution will be neutralized to a non-toxic level to prevent bird and bat mortality. Waste rock will be disposed of on the north side of Hayden Hill. An existing access road will be substantially upgraded. A new transmission line will be constructed to a substation 17 miles to the north to provide electrical power for the project. The life of the mine is estimated to be 8 years. Additional details are provided in the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (Steffen, Robertson and Kirsten 1991).

3. POTENTIAL IMPACTS AND MITIGATION CONCEPTS

Wildlife communities and habitats existing on the Hayden Hill site and anticipated impacts have been identified in detail in the EIR/EIS (Steffen, Robertson and Kirsten 1991). Mitigation measures that were described in conceptual terms in the Draft EIR/EIS are developed into detailed program prescriptions in this document. This mitigation plan also includes consideration of public comments received on the Draft EIR/EIS.

The potential impacts on wildlife and mitigation concepts proposed in the EIR/EIS (Steffen, Robertson and Kirsten 1991) and agreed upon during subsequent meetings and negotiations between the BLM, LGMI, and CDFG are shown in Table 1.

TABLE 1. Impacts and Conceptual Mitigation Plan as Described in the EIR/EIS (Steffen Robertson and Kirsten 1991: Derived from Table I.2-2 "Conceptual Mitigation Plan," page I-14) and revised during ongoing negotiations and meetings.

POTENTIAL IMPACT	MITIGATION CONCEPT
Loss of an isolated population of 25 to 40 sage grouse and the two leks used by the vast majority of the population for breeding; sage grouse are a species of concern in California. Other habitat effects include loss of 355 acres of low sagebrush habitat and temporary loss of 35 acres of grassland habitat.	Passively lure young grouse away from mine operations to establish new lek sites. Protect or replace meadow habitat. Enhance adjacent or local habitat by grazing management at a ratio of 1 acre mitigation/1 acre lost. Monitor populations and habitat; if population declines below 3 displaying males at the new lek (or other leks that become established) and is therefore considered to be lost, a contingency plan for compensation for numbers lost will be activated by LGMI, who will purchase off-site lands

TABLE 1. (Continued)

Loss of 355 acres of low sagebrush habitat.	and manage them to provide an overall population increase of 25-40 birds.
Temporary loss of wetland habitat (0.43 acres of natural wetland and 6.12 acres of manmade 'wetlands') sometimes used by sage grouse, waterfowl and waterbirds, mule deer, pronghorn, and many other species.	Enhance low sagebrush habitat as described above.
Temporary loss of mule deer shrub habitat.	Manage existing wetlands to enhance wildlife habitat. Create additional mitigation wetlands consistent with the Federal 404 permit process to replace lost wetland values and manage these to enhance wildlife habitat.
Changes in mule deer migration route or seasonal use pattern.	Enhance habitat in adjacent areas by planting preferred forage on reclaimed sites. Use prescribed burning to create brushy conditions at a ratio of 3 acres mitigation/1 acre impacted. Manage livestock grazing to improve habitat conditions.
Avoidance of or attraction to the mine site by mule deer or pronghorn.	LGMI to continue monitoring during mining and reclamation phases. Develop solutions for any problems identified.
Loss of about 200 acres of Jeffrey Pine habitat.	LGMI to conduct monitoring to identify and develop appropriate solutions to problems.
Wildlife mortality from exposure to ponds and solutions containing lethal concentrations of cyanide.	Protect adjacent areas at Anderson Ranch and other LGMI lands at an approximate ratio of 1 acre mitigation/1 acre lost.
	Fence all ponds. Neutralize tailings solution to a level nontoxic to wildlife. Cover ponds containing lethal cyanide concentrations with 1-inch mesh netting.
	Implement netting monitoring plan. Netting failures repaired immediately from spare netting stored on-site. Monitor and adjust solution application rates to eliminate pooling of solution on heap surface. Report any mortalities to CDFG and USFWS.
Wildlife mortality due to road kills from increased mine-related traffic.	Provide van service for mine employees to reduce traffic. Report mortalities to CDFG.
Sedimentation of stream habitat of the Modoc Sucker.	Employ erosion control measures throughout the life of the mine. Construct detention ponds to intercept sediments. Conduct other actions as mandated by the Section 7 consultation under the Endangered Species Act.

4. HABITAT MANAGEMENT PLAN ELEMENTS

Plan elements are described individually, in detail, below. Figure 1 shows the locations where the certain mitigation actions will be implemented.

4.1 FEATURED SPECIES

Impacts to specific species were identified above: sage grouse, pronghorn, and mule deer. Discussions with CDFG about this HMP which followed publication of the Draft EIR/EIS included consideration of public comments received, wetland impacts and the 404 permit process. Also discussed were opportunities to offset potential impacts to the golden eagle and prairie falcon, although neither was considered to be significant in the EIR/EIS; and to substantially improve nesting habitat conditions for greater sandhill cranes. Based on the information available at the time of EIR/EIS preparation and to date, it does not appear that the Project will adversely affect cranes. Wetlands mitigation was viewed as a very good opportunity to substantially increase potential habitat quantity and quality for nesting greater sandhill cranes, which are Threatened in California.

4.1.1 Sage Grouse

Goals

- o To preserve an existing, apparently declining population of sage grouse which is located on limited habitat and at the western edge of the range of the species. It is possible, however, that this apparently declining population may be too small to be viable over the long term, even with the implementation of the proposed mitigation.
- o If total loss of the sage grouse population occurs, it will be compensated by LGMI's purchase of sage grouse habitat elsewhere in the region to be managed by LGMI or a conservation organization acceptable to LGMI and CDFG. This land would be managed to provide an overall population increase of 25-40 sage grouse. The criterion for extirpation is that less than 3 displaying males are observed at the new lek or other leks that may arise in the vicinity.

Actions

The sage grouse mitigation program is presented in Exhibits 2 and 3, "Proposed Sage Grouse Mitigation for Lassen Gold Mining Inc.", and "Passive Relocation of Sage Grouse (Centrocercus urophasianus) at Hayden Hill, Lassen County, California" (Bio-Resources, Inc. 1991a,b respectively). This program includes a number of actions, including modifications developed by LGMI and the agencies. These actions are listed below.

- o Attempt to attract young males to surrogate leks at a greater distance from the mine than existing lek sites by using recorded calls and silhouettes to attract birds. Delay of impact to pond lek until development of Stage II of the heap leach pad. See Exhibit 2 for details.

Maintenance of a population of 3-7 males in the Silva Flat-Hayden Hill area for three consecutive years following Project impact is considered to be successful mitigation. If the number of males at a lek is less than 3 for three consecutive years, this is considered to represent failure of the relocation and imminent extirpation of the population. The monitoring and relocation program consists of brood and winter population counts, surrogate lek establishment and passive relocation for at least two more seasons before impact to the pond lek. Details of the program are described in Exhibits 2 and 3. In case of failure, implement contingency plan to provide off-site enhancement to support a compensatory grouse population of 25-40 birds.
- o Temporary road alignment alteration from start of project construction to the start of construction for Stage II of the heap leach pad. This temporary alignment is shown in

Figure 2. During March and April, vehicle drivers will be advised to watch for possible grouse movement near the road near the pond lek. The road speed limit will be set at 20 mph.

- o Manage grazing on pasture located in the southern part of Section 1 and north half of Section 11 to produce succulent forbs the sage grouse are attracted to during late summer. This management will be to initially rest the area for one year (no domestic livestock grazing). Following the rest period, LGMI's range management professional will evaluate vegetation in relation to the objectives. Subsequent grazing will be limited to an early short exposure to knock down last year's residues plus mid and late-season grazing to keep forbs in succulent condition and suitable for sage grouse use. Livestock grazing will be monitored to protect at least 50 percent (by weight) of the annual herbaceous vegetation production prior to mid-September (Call and Maser 1985: 21), and will be carefully monitored in years with lower than normal precipitation. According to Klebenow (1981), meadows with effective cover heights of 0.7 dm to 1.6 dm were inhabited by sage grouse during the summer. The location of these pasture areas are shown in Figure 1.
- o Manage at least 355 acres of low sagebrush habitat in Section 2 to enhance habitat conditions for sage grouse by an initial 2-year rest (no domestic livestock grazing). This rest will be followed by an evaluation of the achievement of the goals by LGMI's range management professional. LGMI will review evaluation findings with CDFG. The grazing prescription will be developed in consultation with CDFG. Subsequent grazing, if it occurs, will be implemented to enhance forb production. Livestock grazing will be monitored to protect at least 50 percent (by weight) of the annual herbaceous vegetation production prior to mid-September (Call and Maser 1985: 21), and will be carefully monitored in years with lower than normal precipitation. The location of this low sagebrush habitat is shown in Figure 1.
- o Provide increased succulent forb production around the periphery of new wetlands created under the Wetland Mitigation Plan by Huffman and Associates, Inc. (1991) (Exhibit 4). Management will be to remove the sagebrush component through mechanical means as well as through manipulation of grazing. Any grazing of the wetland or wetland periphery will only be implemented to manage vegetation to meet habitat needs. The specific grazing prescription will be developed by LGMI in consultation with CDFG. The wetland mitigation site is shown in Figure 1.
- o Manage grazing on upland big sagebrush winter habitat to maintain or improve habitat qualities for sage grouse. This area will also be rested for a period of 2 years without livestock grazing, and then be evaluated by LGMI's range management professional. The specific grazing prescription to follow will be designed to maintain and improve habitat quality for sage grouse. Only light grazing which removes less than 30 percent of the current year's growth will be permitted (Call and Maser 1985: 21). The location of this big sagebrush habitat is shown in Figure 1.
- o The contingency plan, in the event the surrogate lek establishment and passive relocation program is unsuccessful, is to maintain and improve habitat sufficient to support a 25 to 40-bird increase in sage grouse at an area of habitat off-site elsewhere in Lassen or Modoc Counties, within historic grouse range and if possible, accessible to the public. Habitat element priorities are: brood, winter, strutting. Success criteria are a consistent 25-40 bird increase over initial populations for three consecutive years,

according to a monitoring program which will include spring lek surveys, summer brood surveys, and winter aerial surveys. Locations to be considered will be high-quality land. A preliminary list of lands possibly suitable was generated by CDFG and LGMI. This list is not considered necessary to include in this document because the future availability of any of those lands at the time they might be needed for a contingency plan cannot be predicted. A specific management plan for such an area will be developed if and when this contingency plan needs to be activated.

- o Mark any new fences constructed in sage grouse habitat by hanging colored tape or cloth strips from the top wire to make the fence more visible and prevent mortality (Call and Maser 1985).

Cost Estimate

The relocation program is expected to cost \$25,000 per year for 2 years. Low sagebrush and meadow enhancement are expected to cost about \$2500 per year in terms of loss of potential revenue from grazing leases. Other expenses, such as fence maintenance, are expected to cost about \$1000 per year. Monitoring is expected to cost about \$3750 per year. The potential need for LGMI to continue attracting new birds to the new lek cannot be predicted or their costs estimated. The cost of implementation of the contingency plan is not estimated here because it may never be needed, and if it is needed, future land prices cannot be predicted.

4.1.2 Pronghorn

Goals

The goal of the pronghorn mitigation plan is to maintain populations and distribution similar to those during pre-mining conditions.

Actions

- o Manage created wetlands to maximize pronghorn forage production, along with sage grouse on the same meadow area. The specific grazing prescription and location is the same as for sage grouse. The location of this wetland habitat is shown in Figure 1.
- o Manage grazing to increase forb production and other habitat values to pronghorn and sage grouse on 355 acres of adjacent low sagebrush habitat, shown in Figure 1. The specific grazing management and location is the same as for the sage grouse.
- o Continue a joint CDFG-LGMI program of monitoring pronghorn populations and distribution by seasonal aerial surveys and ground observations at intervals to be determined through mutual agreement with CDFG. The existing CDFG pronghorn monitoring program will be continued. Actions to be taken in response to future changes will be agreed upon between CDFG and LGMI.

Costs

The loss of potential revenues from grazing leases is discussed under sage grouse (4.1.1). The LGMI portion of the monitoring is expected to cost about \$500 annually.

4.1.3 Mule Deer

Goals

The goal of the mule deer mitigation plan is to maintain populations at current levels throughout the life of the mine and post-mining.

Actions

- o Manipulate about 1500 acres of brush through prescription burning of shrub habitat located in the "Gerig Burn" area on the Big Valley Ranger District, Modoc National Forest. Actual location and burn size will be determined after consultation among USFS, CDFG, LGMI, and the Project Interagency Wildlife Biologists team. Every effort will be made by LGMI to ensure that the burning will occur within two (2) years of official permitting of the Project. This action is the issuance of the Conditional Use Permit by the County and the Records of Decision by the BLM and USFS. Agency fire restrictions may prohibit such action during a particular year and scheduling will have to be adjusted accordingly.
- o Monitoring will take place through annual terrestrial and aerial counts, to be conducted by LGMI in consultation with CDFG. This will be adjusted as necessary through consultation and amendment to this Plan and Agreement.

Costs

Burning costs are expected to be approximately \$25/acre or \$37,500 to burn 1500 acres. Annual monitoring costs are estimated to be about \$1500.

4.1.4 Golden Eagle

Goals

The anticipated effects of the Project on the golden eagle are not considered to be significant. The home range of a pair of birds, whose nest is over a mile east of the Project, is unknown. Approximately 400 acres of potential open foraging habitat that may be used by this pair of eagles will be affected by the Project. The nest site will not be affected by the Project. Birds in similar habitat in Wyoming had home ranges varying between 4 and 10 square miles. The losses of terrestrial food supplies may be replaced by increases in wetland habitat quality and quantity and therefore, prey. The existing rock outcrops at Hayden Hill appears to be too low to be suitable nesting habitat for golden eagles. An opportunity exists to create potentially suitable cliff nesting habitat for golden eagles in the reclaimed pit wall. Golden eagles nest on active as well as inactive mine pit walls throughout the west, particularly where suitable cliff-nesting habitat is rare or lacking (Fala et al. 1982, Steele and Grant 1982, Olendorff Pers. Comm. 1991, Postovit Pers. Comm. 1991). The goal will be to create suitable cliff nesting habitat for golden eagles on the pit wall as part of the reclamation process, as has been the case at numerous western mines (Green et al. 1987: 59-61).

Actions

- o The mine pit wall will be reclaimed to provide potential nesting habitat for golden eagles, using technology and structures such as those meeting the specifications in Tessman (1982) and Green et al. (1987: 61).

Costs

The cost of constructing suitable cliff nesting habitat is estimated to be about \$7000, on the basis of the references cited above.

4.1.5 Prairie Falcon

Goals

The prairie falcon impact is also not considered to be highly significant, although cliff habitat at Hayden Hill may have been used for a nesting attempt by a pair of prairie falcons in the summer of 1990. Falcons were not observed during the spring or summer of 1991 (J. White, pers. comm.). The goal is to create several nesting potholes for prairie falcons in the final pit wall as part of the reclamation process.

Actions

- o Post-mining habitat enhancement will consist of creating suitable nesting habitat using technology of documented success to create suitable nesting potholes on the mine pit wall. This technology is described in Yoakum et al. (1980) and Becker (1981).

Costs

The estimated cost for prairie falcon nesting pothole construction is about \$2000.

4.1.6 Greater Sandhill Crane

Goals

The goal is to enhance potential sandhill crane nesting habitat through wetland creation described in Exhibit 4. Monitoring of sandhill populations will consist of monthly visits between April and September. It is anticipated that this enhancement will result in future successful breeding activity by local cranes, which it appears would be an improvement over the existing situation, based on information available to date on sandhills in the area.

Actions

The actions are described in the wetland mitigation plan in Exhibit 4.

Costs

The estimated cost for the wetland mitigation plan, described in detail in Exhibit 4, is \$16,600. Annual monitoring costs, for the first five years, are expected to be about \$3750.

4.1.7 Modoc Sucker

Goals

The goal of this program is to avoid adverse impact to Modoc Sucker habitat in Willow Creek, especially during the road crossing reconstruction necessary for the Project. The results of Section 7 Consultation under the Endangered Species Act will determine the details of actions to be taken.

Actions

Actions will be determined by the results of the Section 7 Consultation under the Endangered Species Act, and will include but not necessarily be limited to the following:

- o Implementation of erosion control practices, utilizing appropriate Tahoe Basin Best Management Practices (TRPA 1988), for road construction and maintenance, to minimize sediment production and delivery to drainages to Willow Creek.
- o Use of an arched culvert at the access road crossing of Willow Creek to minimize disturbance of the stream bottom and to ensure that the road crossing does not interfere with passage by Modoc Suckers, if present.

Costs

The costs of this part of the program are included in Project construction costs.

4.2 HABITATS

4.2.1 Wetlands

Goals

The wetland mitigation plan is designed to offset wetland losses due to the Project, through creation and enhancement of approximately 18.5 acres of wetlands.

Actions

The actions are described in Exhibit 4, the wetland mitigation plan. The mitigation measures will be implemented to ensure mitigation of wetland impacts.

Costs

Costs are given above under sandhill crane (4.1.6).

4.2.2 Meadows

Goals

The goal is to maintain 35-40 acres of lush, forb-rich meadow at Anderson Ranch to replace that temporarily lost to the Project. Grazing limitations will be used to maintain high habitat value for a diversity of wildlife species.

Actions

Specific actions are listed below. The Anderson Ranch property is shown in Figure 1.

- o The meadow portions of the Anderson Ranch will be rested from domestic livestock grazing for one year.

- o Headcuts in the meadow will be stabilized by recontouring and planting cuttings from willows native to the meadow area, following Soil Conservation Service Standards and Specifications.
- o After completion of stabilization and planting, domestic livestock grazing will be managed to prevent degradation and to enhance the meadow vegetation. Grazing will be restricted to late spring and early summer periods (about 1 June to 15 July, depending upon plant phenology and soil moisture).

Costs

The cost of the headcut stabilization is estimated to be \$7000. Meadow enhancement is to cost about \$1500 per year in terms of loss of potential revenue from grazing leases.

4.2.3 Low Sagebrush

Goals

Goal is to maintain and enhance 355 acres of low sagebrush habitat to replace lost sage grouse and pronghorn habitat (see above).

Actions and Cost

Actions and cost are described under sage grouse (4.1.1).

4.2.4 Shrub

The goal is to enhance 1500 acres of shrub habitat for mule deer. Actions and costs are as described above under 4.1.3.

4.2.5 Cliff and Outcrop

Goals

To maintain as much cliff and outcrop as possible during the life of the mine and enhance pit walls to provide substitute rock outcrops and cliffs for use by raptors such as the golden eagle, prairie falcon, and turkey vulture.

Actions and Costs

Actions and costs are described above under section 4.1.4.

4.2.6 Permanent and Intermittent Streams

Goals

To replace affected ephemeral stream habitat by enhancing stream habitat in the Anderson Ranch by grazing management to produce additional vegetation and habitat diversity along streams, and to create additional wetland habitat values in the wetland mitigation plan (Exhibit 4).

Actions and Costs

Actions and costs are described in the wetland mitigation plan (Exhibit 4) and the section on Meadows, 4.2.2.

4.2.7 Jeffrey Pine

Goals

The goal is to protect about 230 acres of mature Jeffrey Pine habitat on the Anderson Ranch property and lands adjacent to the Hayden Hill Mine. This action will aid in minimizing impacts on goshawk habitat and other species dependent on large, mature Jeffrey pines by preserving similar habitat on adjacent lands.

Actions

These areas will not be commercially harvested until reclamation bond release. Certain practices to create improved habitat diversity, such as single tree removal, may be implemented following consultation with CDFG. Fire protection measures recommended by California Department of Forestry and Fire Protection will be implemented. The habitat to be protected is located in on land owned by LGMI in Sections 13, 23, 24, 25, 31 and 36 and is shown in Figure 1.

Costs

The cost of this action is estimated to be about \$1500 per year in maintenance. Loss in potential revenues from harvest are not considered in this analysis.

4.3 OTHER FACTORS

4.3.1 Mule Deer Migration Patterns

Goals

The goal is to maintain overall existing mule deer migration patterns through the area, during and after the life of the mine, as much as these patterns are known for pre-mining conditions. According to Thayer and Hall (1985), most of the migration that occurs within the Adin Herd is between higher elevation summer range, typically on U.S. Forest Service Land, to lower elevation winter range, typically on BLM and private land. Much but not all of this migration is relatively short distance as far as is known. Movement patterns are not currently well known and an ongoing program of marking individual deer to track movements is being conducted by CDFG.

Actions

The ongoing of monitoring mule deer by CDFG is described in the Adin Deer Herd Management Plan (Thayer and Hall 1985). Four does were trapped and marked in the Hayden Hill area during the fall of 1990 by CDFG as part of this program. If severe problems in deer movement arise, additional mitigative measures will be determined by negotiation between CDFG and LGMI.

Costs

Not addressed.

4.3.2 Attraction or Avoidance by Mule Deer and/or Pronghorn

Goals

The goal is to maintain approximately the same numbers and distribution of deer and pronghorn in the study area during and after the life of the mine.

Actions

Monitoring of these species will be conducted seasonally by CDFG and LGMI in accordance with the CDFG mule deer (see Section 4.3.1) and pronghorn monitoring programs. If significant problems arise, additional mitigative methods will be determined by negotiation between CDFG and LGMI.

Costs

Not addressed.

4.3.3 Mortality from Cyanide

Goals

The goal is to prevent wildlife mortality due to cyanide exposure.

Actions

- o Net all solution process ponds containing lethal cyanide solutions. Netting will have an effective hole size of 1 inch. Netting has been very effective in preventing mortality by denying birds access to toxic cyanide solutions at heap leach and milling operations (Allen 1990, Hallock 1990, Schroeder 1990). Netting will be inspected daily. A contingency plan in case of net failure consists of immediate repair. A supply of netting will be maintained on-site at all times.
- o The tailings pond solution will be neutralized to cyanide concentrations not lethal to wildlife.

4.3.4 Mortality from Roadkills

Goals

To avoid as many roadkills as possible, recognizing that a slight increase locally in roadkills is not expected to have a significant impact, unless an unknown migration corridor is intersected by new or upgraded roads.

Actions

These actions are described in the EIR/EIS (Steffen, Robertson and Kirsten, 1991).

- o Provide employee van service to and from the mine.
- o Educate commuters about how to safely avoid many roadkill situations.
- o Temporarily reroute the access road to around the pond lek to avoid impacting sage

grouse. The temporary realignment will be from the start of project construction to the start of phase II of the heap leach pad.

5. PLAN REVIEW AND REVISION

As in any natural resources management, conditions are dynamic. In view of this, provision for review and modification of this Plan is necessary. This Plan will be reviewed annually by LGMI to ensure its continued applicability. Should LGMI feel revision or modification is necessary, they will consult with and obtain concurrence from CDFG prior to any change to the Plan.

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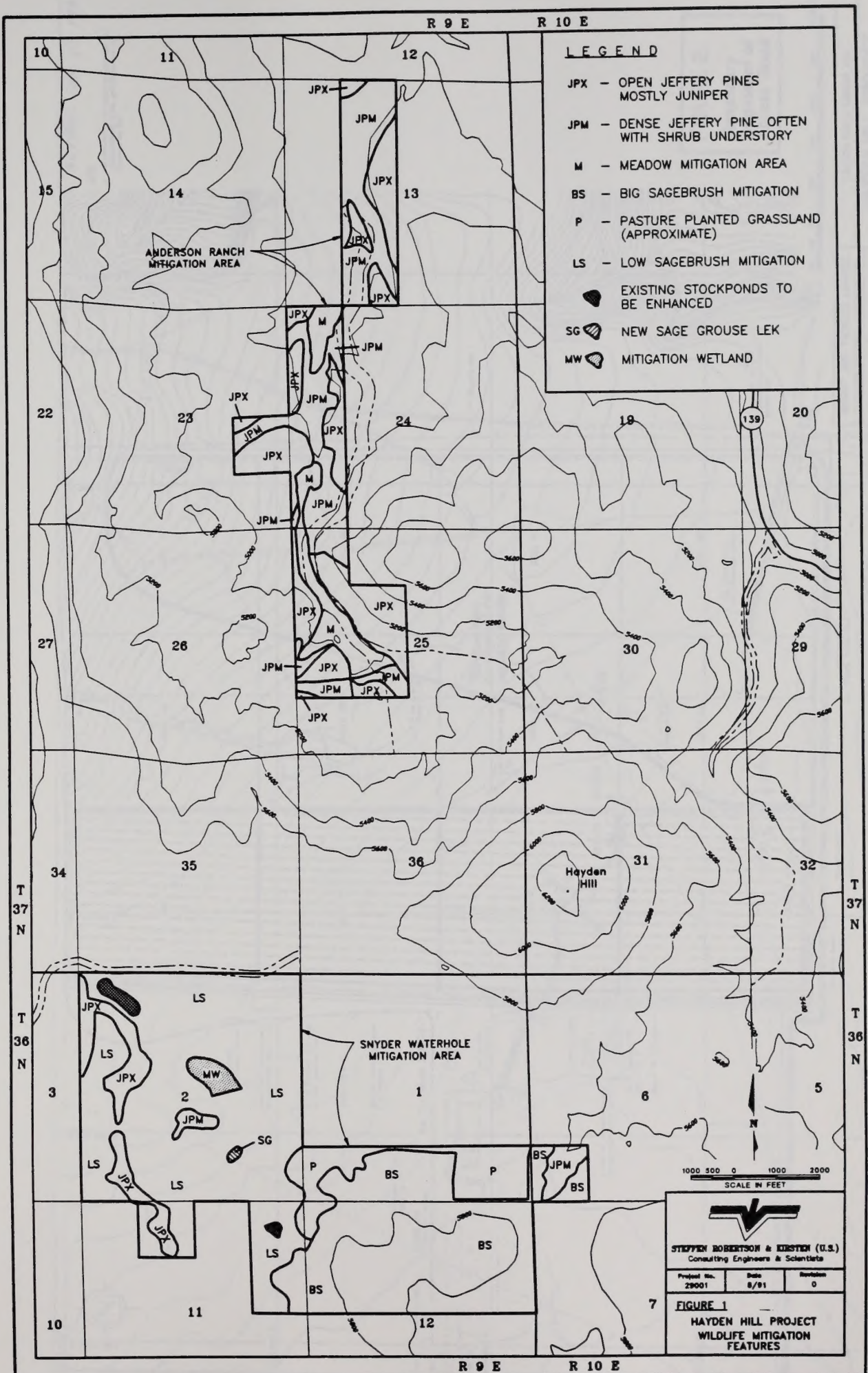
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Please Note:

EXHIBITS 2 AND 3

**OF THE WILDLIFE HABITAT MITIGATION
AND MANAGEMENT PLAN**

are located in Appendix G
under Sage Grouse Mitigation and Relocation

EXHIBIT 4

Habitat Mitigation and Management Plan

E4.0 WETLANDS MITIGATION PLAN

E4.1 Mitigation Constraints/Opportunities

A number of factors have influenced the location and type of wetlands proposed for mitigation. Both Federal and State wetland mitigation policies prefer that mitigation be accomplished on-site or, if that is not feasible, as close to the project site as possible. At Hayden Hill, however, this objective must be tempered by the need to locate the mitigation far enough away from the mine operation to minimize perturbation.

Federal and State mitigation policies also prefer that compensatory mitigation involve in-kind replacement of lost habitats. In this case, we do not believe that resource values are best served by in-kind replacement. Approximately 1.4 acres of the impacted waters/wetlands are seasonally inundated detention ponds, essentially devoid of wetland vegetation and possessing minimal value. In addition, approximately 1.3 acres are seep wetlands which have developed as a result of historic mining activities. While it would be technically feasible to construct similar wetlands using underground pipes with controlled drip, it would be experimental and the likelihood for failure is high over time because of the potential for hardware failure. For this reason, we propose a self-maintaining wetland sustained by impounded surface water.

Three general areas were originally identified as potential mitigation sites: 1) Preston Canyon, north of the mine; 2) the headwaters of the ephemeral drainage in Section 6; and, 3) west of the mine in Section 2. After initial investigation and coordination with members of the Project Steering Committee, the area west of the mine in Section 2 was selected as the preferred mitigation area. Both Preston Canyon and the headwaters of the ephemeral drainage are further removed from the impact area and neither would allow for mitigation of impacts to important species such as sage grouse and pronghorn antelope. In addition, both of these areas are tributaries to Willow Creek which is potential habitat for the endangered Modoc Sucker.

The mitigation area in Section 2 was originally identified because of the overland drainage passing through Snyder Waterhole down stream to Silva Flat Reservoir. Field evidence indicates that a considerable amount of surface runoff passes through this area in the early portion of the growing season. In addition, the soils in this area have a duripan near the surface which can serve to perch this runoff if detained. Because of these preliminary indications, we proceeded with more detailed watershed and soil investigations to ascertain: 1) whether there is sufficient runoff under normal conditions to inundate the area to a sufficient depth to create wetlands; and, 2) whether the duripan is indeed present throughout the mitigation area so that impounded water will be perched at the surface.

Based on these investigations, we estimate that there are, conservatively, 53 acre-feet of water available in a normal year. Given an approximate surface area of 18.5 acres, the total amount of water impounded would be 18.5 acre-feet assuming an average depth of 1 foot, 28 acre-feet assuming an average depth of 1.5 feet and 37 acre-feet assuming an average depth of 2.0 feet. Soil investigations confirm that the duripan is persistent throughout the mitigation area at a depth ranging from 10" to about 30" (averaging 15"-20"). Additionally, 10" to 12" of clay loam and/or clay typically overlays the duripan.

We examined the literature to estimate evaporation rates in order to establish the duration of inundation in a normal year. Based on this, we estimate that in a normal rainfall year the duration of inundation for given water depths at the beginning of March would be as follows:

Water Depth (feet)

Approximate Last Date of Inundation

0.5	Early April
1.0	Early June
1.5	Late June
2.0	Mid July
2.5	Late July, Early August
3.0	August

Based on actual observations at Snyder Waterhole during June and July 1991, there are indications that the evaporation rates assumed for the above analysis may be excessive. If this is the case, it would result in longer periods of inundation than projected.

The composition of the created wetland communities will be largely dependent on the depth and duration of inundation. Based on an examination of existing wetlands within or near the project, particularly the stock pond and Snyder Waterhole, we anticipate the establishment of three broad wetland community types: 1) shallow water seasonal wetlands; 2) deep water seasonal wetlands; and, 3) seasonal aquatic bed/unconsolidated bottom. Exhibit 4 is an idealized cross-section which depicts these wetland communities in relation to various water depths.

The shallow seasonal wetlands will establish around the periphery in areas which are inundated less than six to eight inches. In areas within this zone of inundation where deeper soil overlays the duripan, the dominant species should include slender rush (Juncus tenuis) and Bolanders spikerush (Eleocharis bolanderi) in association with various forbs. Where the topsoil is shallower and susceptible to desiccation earlier in the season, the dominants should include white-headed navaretia (Navarretia leucocephala), flag downingia (Downingia insignis), wooly marbles (Psilocarphus brevissimus), and wandering speedwell (Veronica peregrina). Other species likely to occur in this shallow zone include pillwort (Pillularia americana), popcorn flower (Plagiobothrys spp.), bractless hedge hyssop (Gratiola ebracteata), foxtail (Alopecurus sp.), Hermans dwarf rush (Juncus hemiendytus), and Modoc smartweed (Polygonum polygonoides spp. confertiflorum). The pattern of deep to shallow soil above the duripan within the periphery of the inundation zone will result in a heterogenous wetland boundary.

The deep seasonal wetlands will establish in areas which are inundated from about eight to twenty-five inches. This will comprise largest portion of the created wetlands in terms of areal extent. The dominant species within this zone should be creeping spikerush (Eleocharis palustris) and two-horned downingia (Downingia bicornuta).

The aquatic bed/unconsolidated bottom will occur in areas having water depths of greater than about 30 inches. This zone will normally retain surface water well into August. While inundated, this zone will support floating and emergent aquatics such as fringed water plantain (Machaerocarpus californicus), water buttercup (Ranunculus aquatilis), pondweed (Potamogeton sp.), and mudwort (Limosella aquatica). As the water level recedes, some late season invaders may establish in exposed areas, however, it is anticipated that there will be a high percentage of bare ground.

In addition to these wetland communities, an area approximately 150 feet wide around the periphery will be managed to enhance sage grouse habitat. Specifically, this area will be managed to increase succulent forb

production for sage grouse. Increased forb production should also benefit pronghorn antelope. Nesting islands will be constructed within the created wetlands for Canada geese habitat enhancement. It is anticipated that the deep seasonal wetlands will provide favorable nesting habitat for the greater sandhill crane.

E4.2 Mitigation Goals and Objectives

This mitigation plan has been developed in conformance with Federal and State wetland mitigation policies. Specifically, this plan provides for compensatory mitigation on-site with a sufficient amount of wetlands created to assure that there will be no net loss in wetland area or functional values. In addition, this plan has been developed to mitigate, in part, project impacts to certain key wildlife species.

E4.3 Plan Specifics

Approximately 18.5 acres of seasonally inundated wetlands will be created in Section 2, about 4000 feet west of the proposed tailing storage facility. These wetlands will be created by constructing one to three low-level dikes across a topographic swale "downslope" of Snyder Waterhole. The dikes will be designed and constructed so that water is impounded to a maximum depth of 2.5 to 3.0 feet. The dikes will be constructed by first excavating to the duripan, installing a clay core and then filling to grade. The outlets for the dike will be designed so that they will pass expected flood flows and they will be armored to minimize erosion.

The topsoil within the existing wetland to be impacted will be salvaged and stockpiled for use as a seed source for the created wetlands. Salvaged soil from the stock pond will be placed within the deeper portions of the created wetlands. Salvaged soil from the seeps will be placed within the shallower portions of the created wetlands. The dikes will be finished with top soil. It is anticipated that most or all of this top soil will be obtained from within the inundation zone upslope of the dikes. The salvaged top soil from impacted wetlands will be applied to these areas where top soil has been removed.

Nesting islands will be constructed in areas where there is sufficient depth to the duripan. These islands will be constructed according to the Soil Conservation Service's criteria as follows:

- a. Minimum size: Top width 10 feet. Mounds can be round or oblong. If oblong, place longest dimension parallel to predominant wind direction.
- b. Side slopes: 3:1 to 6:1.
- c. Settled height: The freeboard of islands shall be two feet above the normal water level around March 1st. The top of the island will be as flat as possible to allow more area for nesting.
- d. Earth placement: Foreign matter, such as sticks and trash, will be held to a minimum. When a drag line is used, as much vegetation as possible will be stripped from fill dirt before it is placed.
- e. Compaction: If not constructed by drag line or if not protected with vegetation, the mounds

will be compacted by wheel and/or track equipment during construction.

Following construction of the dikes, but prior to the first flooding, existing, non-wetland, woody vegetation will be removed from the deeper zones of the inundation area. Vegetation will be left intact in shallower zones, however, to minimize the potential for erosion.

E4.4 Construction Schedule

All initial work necessary to accomplish the mitigation will be completed within one year of initiation of construction activities and prior to the onset of the second growing season.

E4.5 Mitigation Maintenance

The wetland and adjacent buffer will be maintained for the purpose of wildlife habitat. Livestock grazing will not be allowed except as part of specific and controlled wildlife habitat enhancement measures. If livestock grazing appears necessary, it will be so explained within the annual monitoring report and coordinated with appropriate resource agencies prior to implementation.

Lassen Gold Mining, Inc. will be responsible for obtaining the necessary title to or lease of the land, nonconsumptive water rights, and providing all costs associated with monitoring as set forth in Section 5.7, including the costs of any corrective actions necessary to assure the success of the mitigation.

E4.6 Mitigation Success Criteria

The following criteria will be used as the standard by which to measure the success of the wetland creation efforts.

- a. Approximately 18.5 acres of self-sustaining waters/wetlands will be created. Of this total, a minimum of 13 acres shall be comprised of shallow or deep seasonal wetlands.
- b. A minimum area of 18.5 acres will be inundated or saturated for at least 10 days during the growing season in an average precipitation year.
- c. A minimum of six nesting islands will be constructed.
- d. Vegetative cover within the deep seasonal marsh will be at least 80 percent, and be dominated by vegetative species associated with prolonged (>30 days) periods of saturation during the growing season. Vegetative cover within the shallow seasonal wetland will exceed 70 percent, and be dominated by species adapted to shorter (<30 days) periods of inundation during the growing season.
- e. A minimum 150-foot wide strip bordering the wetland will be managed to increase forb production.

If successful establishment does not result within two growing seasons following completion of the initial mitigation measures, corrective actions necessary to assure success will be implemented. Possible corrective actions which could be implemented include raising or lowering the outlet structures for the dams, removal of dead vegetation, reseeding, sediment control, weed control and controlled livestock grazing to suppress grass growth and promote forb growth.

E4.7 Mitigation Monitoring

The wetland creation area will be monitored to assess the relative success of the mitigation as measured against the criteria set forth above in Section 5.6. Quantitative vegetation data on species composition and abundance will be collected and recorded annually. Photo points will be established to monitor vegetation trends qualitatively. The hydrologic characteristics of the created wetlands will be observed and monitored on a seasonal basis. Wildlife, including waterfowl, use of the area will be noted during field monitoring.

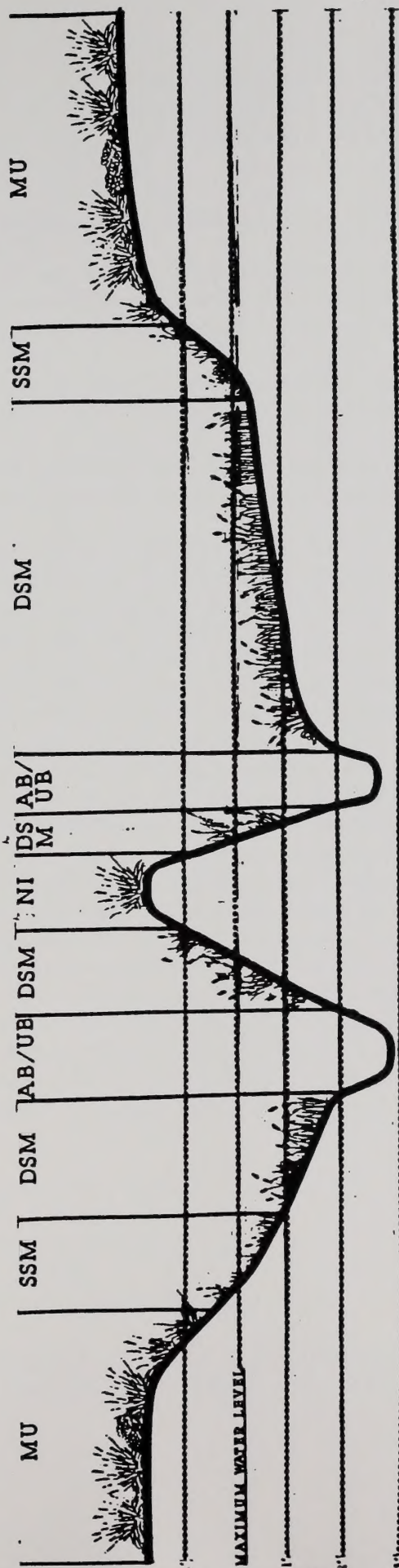
Monitoring efforts will serve to achieve the following:

- a. Determine the success and/or need for improvement of the mitigation effort;
- b. Determine annually the need for supplemental planting or seeding. If vegetative cover criteria for wetland species are not achieved, then additional seeding/sprigging may be required;
- c. Determine whether there is a need to modify the hydrology of the created wetland;
- d. Determine the necessity for weed control. If undesirable plant species are interfering with the establishment of target species, then control measures will be adopted; and,
- e. Determine whether sediment is accumulating and therefore, there is a need for sediment control.

Monitoring data, along with photo documentation, will be incorporated into an annual report. This report will summarize the results, describe any corrective measures taken or recommended. The monitoring report will be submitted annually in September for the duration of the monitoring.

The created wetland will be monitored for five growing seasons from the time that the wetland construction is completed. In the unlikelyhood that success criteria are not being achieved, Lassen Gold Mining, Inc. will: 1) continue to monitor and apply the appropriate corrective measures until success is achieved; or 2) proceed with additional wetland creation project(s) in amount(s) and at location(s) agreed upon by the Corps, sufficient to offset the unsuccessful areas.

TYPICAL WETLAND X-SECTION



Vertical Scale: 1" = 2'
Horizontal Scale: 1" = 60'

LEGEND	
MU	Managed Upland
SSM	Shallow Seasonal Marsh
DSM	Deep Seasonal Marsh
AB/UB	Aquatic Bed/ Unconsolidated Bottom
NI	Nesting Island

HAYDEN HILL MINE
WETLAND MITIGATION AREA
BY: HUFFMAN & ASSOCIATES, INC.
SACRAMENTO, CALIFORNIA
JULY, 1991

BAVIES HILL PROJECT
EIR/EIS DISTRIBUTION
September, 1991

Federal Agencies

Dept. of Agriculture, Office of Environmental Coordination, US Forest Service, Washington D.C.
Dept. of Agriculture, Office of Equal Opportunity, Washington D.C.
Dept. of Agriculture, Rural Electrification Administration, Washington D.C.
Dept. of Agriculture, Soil Conservation Service, Riverdale, MD
Washington D.C.
Dept. of Agriculture, Soil Conservation Service, Davis, CA
Dept. of Interior, Mineral Management Service, Office of Environmental Dirs., Washington D.C.
Dept. of Interior, National Park Service, Environmental Quality Div., Washington D.C.
Dept. of Interior, National Park Service, Dir. of Environmental Compliance, Washington D.C.
Dept. of Interior, Fish & Wildlife Service, Dir. of Fish Control, Washington D.C.
Dept. of Interior, Fish & Wildlife Service, Sacramento Field Office, Sacramento, CA
Dept. of Interior, US Geological Survey, Environmental Affairs, Denver, CO
Dept. of Interior, Bureau of Mines, Spokane Field Office, Spokane, WA
Dept. of Interior, Dir. of Public Affairs, Washington D.C.
Dept. of Interior, National Resources Library, Washington D.C.
USAR, Deputy Assistant Secretary for Environment, Washington D.C.
USAR, Acting AD's, Environmental Division, Washington D.C.
Dept. of Energy, Office of Environmental Compliance, Washington D.C.
EPA Region IX, Environmental Policy Coordinator, San Francisco, CA
EPA Region IX, EIS Review Coordinator, San Francisco, CA
Army, Chief of Engineers, Chief of Planning, San Francisco, CA
Dept. of Commerce, NOAA Ecology and Conservation Division, Washington D.C.
Dept. of Labor, Assistant Secretary for Mining Safety & Health, Arlington, VA
Dept. of Labor, Assistant Secretary for Occupational Safety & Health, Washington D.C.
American Consulting Engineers, Secretary of Energy and Environment, Washington D.C.
Dept. of Health and Human Services, Office Special Programs Coordinator
Dept. of Housing and Urban Development, Region IX Administrator, San Francisco, CA
Federal Aviation Administration, Los Angeles, CA
Federal Highway Administration, San Francisco, CA
United National Forces, Menlo Park, CA

State Agencies

State Clearinghouse (10 copies)
Central Valley R/W C&G
Division of Mines and Geology
Dept. of Conservation
Dept. of Fish and Game, Frank Hall

Note: This list was compiled and provided by Linda Gentry, BIA - Sacramento, and staff - Bureau. It is not intended as a complete list of all agencies.

APPENDIX J
Distribution List for EIR/EIS

**HAYDEN HILL PROJECT
EIR/EIS DISTRIBUTION
September, 1991**

Federal Agencies

Dept. of Agriculture, Office of Environmental Coordination, US Forest Service,
Washington D.C.
Dept. of Agriculture, Office of Equal Opportunity, Washington D.C.
Dept. of Agriculture, Rural Electrification Administration, Washington D.C.
Dept. of Agriculture, Soil Conservation Service, Ecological Sciences Division,
Washington D.C.
Dept. of Agriculture, Soil Conservation Service, Davis, CA
Dept. of Interior, Mineral Management Service, Offshore Environmental Div., Washington
D.C.
Dept. of Interior, National Park Service, Environmental Quality Div., Washington D.C.
Dept. of Interior, National Park Service, Div. of Environmental Compliance, Washington
D.C.
Dept. of Interior, Fish & Wildlife Service, Div. of Env. Coord., Washington D.C.
Dept. of Interior, Fish & Wildlife Service, Sacramento Field Office, Sacramento, CA
Dept. of Interior, US Geological Survey, Environmental Affairs, Reston, VA
Dept. of Interior, Bureau of Mines, Western Field Center, Spokane, WA
Dept. of Interior, Dir. of Public Affairs, Washington D.C.
Dept. of Interior, Natural Resources Library, Washington D.C.
USAF, Deputy Assistant Secretary for Environment, Washington D.C.
USAF, Bolling AFB, Environmental Division, Washington D.C.
Dept. of Energy, Office of Environmental Compliance, Washington D.C.
EPA Region IX, Environmental Review Coordinator, San Francisco, CA
EPA Region IX, EIS Review Coordinator, San Francisco, CA
Army Corps of Engineers, Chief of Planning, San Francisco, CA
Dept. of Commerce, NOAA Ecology and Conservation Division, Washington D.C.
Dept. of Labor, Assistant Secretary for Mining Safety & Health, Arlington, VA
Dept. of Labor, Assistant Secretary for Occupational Safety & Health, Washington D.C.
Interstate Commerce Commission, Secretary of Energy and Environment, Washington D.C.
Dept. of Health and Human Services, Office Special Programs Coordinator
Dept. of Housing and Urban Development, Region IX Administrator, San Francisco, CA
Federal Aviation Administration, Los Angeles, CA
Federal Highway Administration, San Francisco, CA
Lassen National Forest, Susanville, CA

State Agencies

State Clearinghouse (10 copies)
Central Valley RWQCB
Division of Mines and Geology
Dept. of Conservation
Dept. of Fish and Game, Frank Hall

Note: This list was compiled and provided by Lassen County, BLM - Susanville,
and USFS - Alturas. It is not necessarily a complete list of all reviewers.

Dept. of Fish and Game, Banky Curtis - Regional Manager, Redding, CA
 Dept. of Fish and Game, Doug Thayer - Unit Manager, Alturas, CA
 Dept. of Fish and Game, Dennis Young - Game Warden, Adin CA
 Ash Creek Wildlife Area, Bieber, CA
 Calif. State Land Commission, Legal Unit, Tim Treischeldt, Sacramento, CA
 Calif. State Land Commission, Stephen Jones, Sacramento, CA
 Al Willard, Calif. State Lands Commission, Long Beach, CA
 Caltrans, District 2, Environmental Coordinator, L. Michelle Gallagher, Redding, CA
 Air Resources Board
 Department of Water Resources - Wayne County
 Office of Historic Preservation
 Native American Heritage Comm.
 CDF/County Fire Warden, Susanville
 California Highway Patrol
 Employment Development Department - Ronald Jimenez
 Jerry Quigley, Calif. Dept. of Forestry & Fire Protection, Bieber, CA
 Lloyd Keefer, Calif. Dept. of Forestry & Fire Protection, Susanville, CA
 Larry Birge, Calif. Dept. of Forestry & Fire Protection, Alturas, CA
 Calif. Dept. of Forestry & Fire Protection, Redding, CA
 Honorable Tim Leslie, Calif. State Senate, Sacramento, CA
 Honorable Stan Statham, Calif. State Assembly, Sacramento, CA
 Honorable John Doolittle, US Congress 14th Dist., Stockton, Ca

Lassen County

Dept. of Public Works/Roads Department
 Air Pollution Control District
 Health Department - Doug Ames
 Sheriff
 Housing Department - Art Broughton
 Lassen County Library
 Water District No. 1
 Historical Society
 Lassen Union High School District
 Susanville Elementary School District
 Lassen County Superintendent of Schools
 Gary Lemke, Lassen County Supervisor, District IV, Adin, CA
 Glen Nader, Lassen County Farm Advisor, Susanville, CA

City of Susanville

Susanville Consolidated Sanitary District
 Susanville District Advisory Council, Doug Hirschman
 Susanville District Advisory Council, Carl Barnett
 Susanville District Advisory Council, Ed Dunkley
 Susanville District Advisory Council, Sarah Booch
 Modoc County Planning Department
 Modoc County Library

Note: This list was compiled and provided by Lassen County, BLM - Susanville, and USFS - Alturas. It is not necessarily a complete list of all reviewers.

EIR/EIS Distribution (continued)

Commentors to the Draft EIR/EIS

Lassen Gold Mining, Inc.
Office of Planning and Research
Department of Fish and Game
Department of Food and Agriculture
State Lands Commission
Organized Sportsmen of Lassen County
Sierra Club, Arcata (Susie Van Kirk)
Sierra Club, Shasta Group (Carl Weidert)
Sierra Club, California/Nevada RCC Mining Committee (Stan Haye)
Leroy Rice
Jerry Parks
Fall River-Big Valley Cattlemen's Association, Inc. (Steven Knoch, President)
Ed Albaugh
Kenneth L. Jackson
Susanville School District (Marshall Leve, Jr.)
Don Bardella
Junior and Gerta Elzea
Martin Balding
Law Office of Roger Beers (Trent Orr on behalf of Larry Newhall, Natural Resources Defense Council, and the Wilderness Society)
US Fish and Wildlife Service
Soil Conservation Service
Julie Rechin
Linda Lopez
Department of Health and Human Services
David Burns (on behalf of the Napoles family)
Lassen County Cattlemen's Association
Steve Main
Department of Conservation
EPA
Bureau of Mines
National Park Service
Central Valley Regional Water Quality Control Board
Lassen County Farm Bureau
Air Resources Board

TABLE 1
SURFACE WATER MONITORING SUMMARY
SAMPLING SITES

SAMPLE LOCATION		APPENDIX K Water Quality Monitoring Program	
LEETERRICK CANYON	MANUAL	One/Quarter (1/4) sec Flowage	1
	1500 SAMPLES	One/Quarter Secs. Flowage	1
MAYDON HILL CREEK AT INDIAN SPRING	MANUAL	One/Quarter	1
	1500 SAMPLES	One/Quarter Secs. Flowage	1
WILLOW CREEK ABOVE MAYDON HILL LEETE CONFLUENCE		One/Quarter	1
WILLOW CREEK BELOW MAYDON HILL CREEK CONFLUENCE		One/Quarter	1
WILLOW CREEK ABOVE LEETERRICK CANYON		One/Quarter	1
WILLOW CREEK BELOW PRESTON CANYON		One/Quarter	1
GRAY DEAN SPRING		One/Quarter	1
STON'S HOLE ABOVE SILVA PLAT RESERVOIR		One/Quarter	1
INDIAN SPRINGS		One/Quarter	1
SPYDER WATER HOLE		One/Quarter	1
BUNGELANDER SPRING		One/Quarter	1

1900

TABLE 2-1

SURFACE WATER SAMPLING SUMMARY

SAMPLING SITES

SAMPLE LOCATION	FREQUENCY (DISPOSITION)	NO. OF SAMPLES (4)
LETTERBOX CANYON MANUAL	Once/Quarter (When Flowing)	1
ISCO SAMPLER	Once/Week Storm Events	1 1
HAYDEN HILL CREEK MANUAL AT INDIAN SPRING	Once/Quarter	1
ISCO SAMPLER	Once/Week Storm Events	1 1
WILLOW CREEK ABOVE HAYDEN HILL CREEK CONFLUENCE	Once/Quarter	1
WILLOW CREEK BELOW HAYDEN HILL CREEK CONFLUENCE	Once/Quarter	1
WILLOW CREEK ABOVE PRESTON CANYON	Once/Quarter	1
WILLOW CREEK BELOW PRESTON CANYON	Once/Quarter	1
DAISY DEAN SPRING	Once/Quarter	1
STOCK POND ABOVE SILVA FLAT RESERVOIR	Once/Quarter	1
INDIAN SPRINGS	Once/Quarter	1
SNYDER WATER HOLE	Once/Quarter	1
BUNSELMEIER SPRINGS	Once/Quarter	1

TABLE 2-1 CONTINUED

QA/QC SAMPLES FOR AUTOMATIC SAMPLERS

WASHDOWN BLANK	First Sampling, then once every 20 samples	1
FIELD EXTERNAL BLANK	First Sampling	1
BLIND STANDARD PERFORMANCE CHECK	Second Sampling, then once every 50 samples	As Required ⁽²⁾

QA/QC SAMPLES FOR MANUAL SAMPLING

SAMPLE LOCATION	FREQUENCY (DISPOSITION)	NO. OF SAMPLES ⁽⁴⁾
FIELD EXTERNAL BLANK	First Sampling	1 Sample ⁽⁴⁾
BOTTLE BLANK	In the absence of Laboratory-Certified Clean Bottles Only	1
	First Sampling and Up to One Sample per Alternating Bottle Lot up to 5 Samples Total	1
CO-LOCATED DUPLICATE	Once/Quarter ⁽¹⁾	1
BLIND STANDARD PERFORMANCE CHECK	Second Sampling, then 1/50	As required ⁽²⁾

SEDIMENT SAMPLING SITES

LETTERBOX CANYON	Once/Season	1
INDIAN SPRINGS	Once/Season	1

- (1) Co-located duplicate should be obtained from a different site each quarter.
- (2) Blind standards should be submitted for surface water characteristics of concern (e.g., heavy metals, etc.) that are found to be present in selected first quarter samples.
- (3) This sample will be prepared by passing the washdown rinsate through a filter and placing the filtrate in a sample bottle. If the sample exhibits out-of-conformance character, separate washdown and field external samples should be collected and tested on subsequent sampling events. Subsequent QA/QC samplings should just address washdown rinsate if the results are in conformance.
- (4) Each sample consists of two bottles: (1) unpreserved, (2) filtered and acidified.

TABLE 2-2**GROUND WATER SAMPLING SUMMARY****GROUND WATER MONITORING WELLS**

SAMPLE LOCATION	FREQUENCY (DISPOSITION)	NO. OF SAMPLES⁽⁴⁾
M89-1	(Dry)	
M89-3	Once/Quarter	1
M89-4	Once/Quarter	1
M89-5	Once/Quarter	1
M89-6	Once/Quarter	1
M90-7	Once/Quarter	1
M90-8	Once/Quarter	1
M90-9	Once/Quarter	1
M90-10	Once/Quarter	1
M90-11	(Depth Measurement Only-- Paired with M90-8)	

PIEZOMETERS (LYSIMETERS)

TAILINGS STORAGE FACILITY	Check Once/Month (Sample if Lysimeter Contains Water)	1
HEAP LEACH PAD	Check Once/Month (Sample if Lysimeter Contains Water)	1

TABLE 2-2 CONTINUED
GROUND WATER QA/QC SAMPLES

SAMPLE LOCATION	FREQUENCY (DISPOSITION)	NO. OF SAMPLES ⁽⁴⁾
WASHDOWN BLANK	First Sampling, then once every 20 samples	1
FIELD EXTERNAL BLANK	First Sampling	1
BOTTLE BLANK	Same as Surface Water (Table 2-1)	1
CO-LOCATED DUPLICATE	Once/Quarter ⁽¹⁾	1
BLIND STANDARD PERFORMANCE CHECK	Second Sampling, then once every 50 samples	As Required ⁽²⁾

- (1) Co-located duplicate should be obtained from a different well each quarter.
- (2) Blind standards should be submitted for ground water characteristics of concern (e.g., heavy metals, etc.) that are found to be present in selected first quarter samples.
- (3) This sample will be prepared by passing the washdown rinsate through a filter and placing the filtrate in a sample bottle. If the sample exhibits out-of-conformance character, separate washdown and field external samples should be collected and tested on subsequent sampling events. Subsequent QA/QC samplings should just address washdown rinsate if the results are in conformance.
- (4) Each sample consists of two bottles: (1) unpreserved, (2) filtered and acidified.

FILE:74T52.WK1
FEBRUARY 26, 1991

TABLE 5-2

HAYDEN HILL PROJECT, LASSEN COUNTY, CALIFORNIA
SAMPLING DETAILS FOR THE GROUND AND SURFACE WATER INVESTIGATION

CONSTITUENT	CONTAINER (1)	FIELD		HOLDING TIME	SAMPLING FREQUENCY
		FILTERED	PRESERVATIVE (2)		
ARSENIC	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	NR(3)
BARIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	NR
CADMIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
CALCIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
CHROMIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
COPPER	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR-SP
IRON	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
LEAD	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	NR
MAGNESIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
MANGANESE	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
MERCURY	1 LITER, POLYETHYLENE	YES	NITRIC ACID	28 DAYS	NR
NICKEL	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	NR
POTASSIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
SODIUM	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR
ZINC	1 LITER, POLYETHYLENE	YES	NITRIC ACID	6 MONTHS	QTR-SP
ACIDITY/ALKALINITY	0.5 LITER, POLYETHYLENE	NO(4)	NONE	14 DAYS	QTR
BICARBONATE	0.5 LITER, POLYETHYLENE	NO(4)	NONE	14 DAYS	QTR
SULFATE	0.5 LITER, POLYETHYLENE	NO(4)	NONE	28 DAYS	QTR
CHLORIDE	0.5 LITER, POLYETHYLENE	NO(4)	NONE	28 DAYS	QTR
TOTL DISSOLVED SOLIDS	0.5 LITER, POLYETHYLENE	NO(4)	NONE	7 DAYS	QTR
pH	0.5 LITER, POLYETHYLENE	NO(4)	NONE	11 DAYS	QTR
SPECIFIC CONDUCTANCE	0.5 LITER, POLYETHYLENE	NO(4)	NONE	11 DAYS	QTR
NITRATE	1 LITER, POLYETHYLENE	NO	SULFURIC ACID	28 DAYS	QTR
PHOSPHATE	1 LITER, POLYETHYLENE	NO	40 mg/liter HgCl2	3 MONTHS	QTR
TOTAL CYANIDE	1 LITER, POLYETHYLENE	NO	SODIUM HYDROXIDE	14 DAYS	QTR-SP
FREE CYANIDE					NR
>>>>>SURFACE WATER ONLY<<<<<					
TURBIDITY	1 LITER, POLYETHYLENE	NO	NONE	14 DAYS	QTR
SETTLABLE SOLIDS	1 LITER, POLYETHYLENE	NO	NONE	14 DAYS	QTR
TOTAL SUSPENDED SOLIDS	1 LITER, POLYETHYLENE	NO	NONE	14 DAYS	QTR

NOTE 1: THE NUMBER OF CONTAINERS REQUIRED FOR EACH SAMPLE SHOULD BE DETERMINED BY GROUPS, DEPENDENT ON IDENTICAL CONTAINER TYPE, WHETHER FIELD FILTERING IS REQUIRED, THE SAMPLE PRESERVATIVE, AND THE REQUIRED HOLDING TIME.

NOTE 2: ALL SAMPLES WILL BE REFRIGERATED TO 4 DEGREES CELSIUS FOR SHIPPING.

TABLE 5-2
(CONTINUED)

NOTE 3:

QTR = QUARTERLY

QTR-SP = QUARTERLY AND SET POINT CONSTITUENT

NR = NON ROUTINE

IF CU OR ZN CONCENTRATION EXCEEDS THREE TIMES THE DETECTION LIMIT,
As, Ba, Cr, Pb, Hg AND Ni WILL BE MEASURED FOR TWO CONSECUTIVE
MONITORING PERIODS.

IF TOTAL CN EXCEEDS TWO TIMES THE DETECTION LIMIT, FREE
CN WILL BE MEASURED FOR TWO CONSECUTIVE MONITORING PERIODS.

NOTE 4:

SAMPLES WILL BE FILTERED BY LABORATORY WITHIN 24 HOURS OF SAMPLING.

TABLE 8-1
HAYDEN HILL PROJECT
WATER BASELINE PARAMETERS

TEST PARAMETER	REFERENCE ⁽¹⁾	METHOD ⁽²⁾	PRACTICAL QUANTIFICATION LIMITS (ug/l)
ARSENIC	EPA, 1983	206.4	10
BARIUM	EPA, 1983	208.1	10
CADMIUM	EPA, 1983	213.2	1
CALCIUM	EPA, 1983	215.1	10
CHROMIUM	EPA, 1983	218.1	50
COPPER	EPA, 1983	220.1	20
IRON	EPA, 1983	236.1	20
LEAD	EPA, 1983	239.2	1
MAGNESIUM	EPA, 1983	242.1	1
MANGANESE	EPA, 1983	243.1	10
MERCURY	EPA, 1983	245.1	0.2
NICKEL	EPA, 1983	249.1	40
POTASSIUM	EPA, 1983	258.1	10
SODIUM	EPA, 1983	273.1	2
ZINC	EPA, 1983	289.1	5
TOTAL ALKALINITY AS CALCIUM CARBONATE	EPA, 1983	310.1	10,000
BICARBONATE ALKALINITY	EPA, 1983	310.1	
TOTAL DISSOLVED SOLIDS	EPA, 1983	160.1	5,000
TOTAL PHOSPHATE	EPA, 1983	365.3	6
FREE CYANIDE	EPA, 1983	335.2	10
TOTAL CYANIDE	EPA, 1983	335.2	20
NITRATE	EPA, 1983	353.3	10
SULFATE	EPA, 1983	375.4	1000
CHLORIDE	EPA, 1983	9250	1000
SPECIFIC CONDUCTANCE (FIELD)	SW-846	9050	5 umhos/cm
pH (FIELD)	SW-846	9040	0.1 s.u.
Temperature			
SURFACE WATER ONLY			
TURBIDITY	EPA, 1983	180.1	NA
SETTLABLE SOLIDS	EPA, 1983	160.5	NA
TOTAL SUSPENDED SOLIDS	EPA, 1983	160.2	NA

NA = NOT APPLICABLE

(1) REFERENCES

SW-846 Test Methods for Evaluating Solid Waste, 3rd Ed., SW-846, 1986.
EPA, 1983 Methods for Chemical Analysis of Water and Wastes, EPA, 1983.

(2) METHODS: The number refers to the analytical procedures described in the References.

LASSON GOLD MINING, INC.

RAYDEN HILL MINE

APPENDIX L

Emergency Response Plan and Spill Prevention, Control and Countermeasure Plan

Submitted To:

Lassen County Planning Commission

Susanville, California

Submitted By:

Lassen Gold Mining, Inc.

Susanville, California

Dated July, 1991

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LASSEN GOLD MINING, INC.	
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and	
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The purpose of this plan is to provide a clear and concise description of the procedures to be followed in the event of an emergency. This plan is designed to ensure that all personnel are aware of the procedures to be followed in the event of an emergency and that they are able to respond in a timely and effective manner.

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This Emergency Response Plan accounts for facility design, equipment, operation and maintenance. This document explains the components and elements of the plan. The purpose of this plan is to provide a clear and concise description of the procedures to be followed in the event of an emergency. This plan is designed to ensure that all personnel are aware of the procedures to be followed in the event of an emergency and that they are able to respond in a timely and effective manner.

Section One

Emergency Response Plan

The Emergency Response Plan is maintained in the following offices:

1. General Manager
2. Administration (i.e., Environmental, Safety, etc.)
3. Departmental Superintendents

The Emergency Response Plan is developed in accordance with all applicable laws and regulations. The plan is designed to ensure that all personnel are aware of the procedures to be followed in the event of an emergency and that they are able to respond in a timely and effective manner.

FOREWORD

Hayden Hill Mine is a gold mining and processing operation consisting of an open pit mine, crushing, milling, heap leach and tailing impoundment facilities.

Due to the nature and layout of the process facility, (i.e. its building and enclosed processing areas) all storage areas are within containment diking or the walls and structures of the plant itself.

This **Emergency Response Plan** accounts for facility design, construction, operation and maintenance. This document explains the components and elements of the Hayden Hill Mine Emergency Response Plan and associated procedures. The purpose of this plan is to minimize spill potential through design features (such as secondary containment impoundments), the establishment of procedures for storage and handling of material, and to enable a quick and efficient response in the event of a spill.

The Emergency Response Plan is maintained in the following offices:

1. General Manager.
2. Administration (i.e., Environmental, Safety offices).
3. Departmental Superintendents.

This Emergency Response Plan is developed in accordance with AB 2185, following the established guidelines under the California Health and Safety Code, Section 25503.5, that requires a Business Plan to include all aspects of emergency response.

**Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
the Hayden Hill Mine**

Business Name

Lassen Gold Mining, Inc. - Hayden Hill Mine

Business Phone

(916) 257-2411

Operator

Lassen Gold Mining, Inc. (LGMI)

SIC Code

10

Nature of Business

Gold/Silver Mine and Processing Facilities

Address of Facility

Hayden Hill Mine is located in Lassen County, 54 miles north-northwest of Susanville, California. The site is approximately 4 miles south and west of California Hwy 139, on Hayden Hill Road. Operations occur primarily within Sections 1, 6, 31, 36; Townships 36N., 37N.; Range 9E., and 10E. (Figure A).

Mailing address: Hayden Hill Mine
P.O. Box 1028
Susanville, CA 96130

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for the Hayden Hill Mine

Security

The Hayden Hill Mine has an active security/safety system. Access to the project is through a gate which is manned 24 hours a day. Yard lighting is adequate to prevent vandalism and to allow detection of spills or leaking facilities.

Examples of security measures include: routine patrol of the operation by security officers in vehicles or on foot, fencing to prevent intruders from entering the operation, adequate lighting, vehicular traffic control, a security facility at the main entrance gate where all personnel are required to sign in, secured or locked entrances to the mine, and locks on certain valves or pump starters.

All trucks and vehicles delivering chemicals, fuels, etc., are inspected for leakage and stability when entering the Hayden Hill Mine property. This inspection is performed by security personnel with the assistance of maintenance personnel when requested. The inspection includes:

1. Checks for any visible leakage.
2. General condition of the vehicle and equipment.

Hayden Hill Mine will provide coorrective assistance to vendor vehicles found to be leaking or to have an unstable load. However, if a spill or release occurs because the vendor was transporting a leaking load, the vendor is ultimately responsible/liable for State notification, clean-up, reporting, etc..

The Hayden Hill Mine security system prevents accidental or intentional entry to a plant which might result in vandalism, theft, sabotage or other improper or illegal use of facilities that could possibly result in an incident.

Transporter Qualifications

Transporters are carefully selected, and are required to have acceptable spill response programs, hazardous materials safety and handling procedures, and driver training programs. Each approved transporter is periodically reviewed to assure that they continue to uphold the necessary high standards. Should any spill incident occur, the circumstances of and response to the incident will be examined to determine if that transporter will be used for future deliveries.

Delivery Scheduling

The potential of spill occurrence may be reduced by scheduling delivery times to avoid any regular or temporary congestion that may occur along routes leading to Hayden Hill Mine. Transporters are required to inform Hayden Hill Mine of any delays or schedule changes which occur. Deliveries are made primarily in daylight hours to minimize off loading problems.

Regulatory Compliance

Transporters making deliveries to Hayden Hill Mine are required to follow all federal Department of Transportation (DOT) regulations for the transportation of hazardous materials, as defined in the Code of Federal Regulations (CFR) Title 49. This will include all placarding, packaging, etc..

Response Outside County

The transporter or contract carrier will implement his spill response plan. The LGMI General Manager will be notified as a courtesy and kept informed of the success of the cleanup.

Response Inside County

The transporter or other agency (i.e., County Sheriff, California Highway Patrol) who is first made aware of the emergency will notify the county emergency response office. If LGMI is informed of the incident, a LGMI representative may then direct the Hayden Hill Mine Emergency Response Team to the scene, if requested, although LGMI will assume no responsibility for the incident.

**Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
the Hayden Hill Mine**

Emergency Contact Persons

All communications for mine-site emergencies are to be coordinated through the Security Office. The Security Office has mine site radio and telephone capabilities.

Emergency contacts for Hayden Hill Mine site incidents:

1. Jeff White - Environmental Supervisor.
2. Craig Walters - Loss Prevention Supervisor.
3. Richard Bohling - Mill Superintendent.
4. Ron Largent - Mine Superintendent.
5. Larry Hansen - General Manager.

Note: Emergency Contact Persons can be reached at the business phone number (916) 257-2411, or through the Security Dept. where non-business phone numbers are on file.

Spill Response (Releases Outside of Secondary Containment)

1. Reporting and Notification

- a. In the event of a spill, release, or threatened release involving a hazardous material outside of secondary containment, the discoverer of the event will report the situation directly to Security. Security will, in turn, contact the appropriate supervisor responsible for the area in which the event occurred. The supervisor will carry out an immediate shutdown or repair of the system experiencing the upset. At a minimum, Security will obtain the following relevant information.

1. The type of material released, if known.
2. Time the emergency event was discovered.
3. Where the emergency event occurred.
4. Number and status of the persons involved.
5. Equipment involved.
6. Remedial action implemented to alleviate the situation.

- b. If the supervisor determines that the spill has occurred outside the secondary containment area, Security will be informed and advised to contact the designated spill control person(s).

- c. Security will start a chronological log of all pertinent information for use in reporting to local, state, and/or federal agencies.

2. Once the release has been controlled and contained, the designated spill control person(s), (Environmental Supervisor, Loss Prevention Supervisor) and the appropriate supervisor of the affected area, will evaluate the spill site and estimate the volume of material released.

- a. When the spill is determined to be released outside secondary containment, then both the Local Emergency Services Office in Susanville and the State Office of Emergency Services (OES) will be contacted immediately. This meets federal reporting requirements.

-Local Emergency Services.....9-1-1
-Office of Emergency Services (Susanville)..916-257-8311
-State Office of Emergency Services.....916-427-4341

Spill Response - Continued

- b. In addition to notification under 2 a., if the spilled volume is at or above the reportable quantity for extremely hazardous materials, as identified in SARA Title III, then the National Response Center will be notified.

-National Response Center - 1-800-424-8802

- c. The following information will be given to the regulating agencies:

1. The exact location of the release or threatened release.
2. The name of the person reporting the release or threatened release.
3. The hazardous materials involved in the release or threatened release.
4. An estimate of the quantity of hazardous materials involved.
5. If known, the potential hazards involved in the release or threatened release.
6. Remedial action that has been taken.

3. Release Definitions:

- a. Release - is defined in AB 2185 as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, unless permitted or authorized by a regulatory agency.
- b. Threatened Release - as defined by the State of California, Office of Emergency Response (OES), means a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce, or mitigate damages to persons, property or the environment.

Spill Response - Continued

- c. Materials present on-site which are classified by the Federal Government as Extremely Hazardous Substances or Hazardous Substances are:

Material	Reportable Quantity
Sodium Cyanide (NaCN)	10 Lbs.
Nitric Acid (HNO ₃)	1,000 Lbs.
Sodium Hydroxide (NaOH)	1,000 Lbs.
Hydrochloric Acid (HCL)	5,000 Lbs.

All materials listed above are part of the mill operation and spilled quantities can be calculated by mill shifter.

4. Immediate reporting defined (OES definition):

1. A person shall provide an immediate verbal report of any release or threatened release of a hazardous material to the administering agency (local emergency services) and the Office of Emergency Response as soon as:
 - a. The person (employee, authorized representative, designee, etc.) has knowledge of the release or threatened release; and
 - b. Notification can be provided without impeding immediate control of the release or threatened release.
 - c. Notification can be provided without impeding immediate emergency medical measures.
5. Only person(s) familiar with facility components and reporting requirements will contact the regulatory agencies. Only the General Manager, Environmental Supervisor, Loss Prevention Supervisor (or other personnel designated by the General Manager) will contact the appropriate local, state and federal agencies.

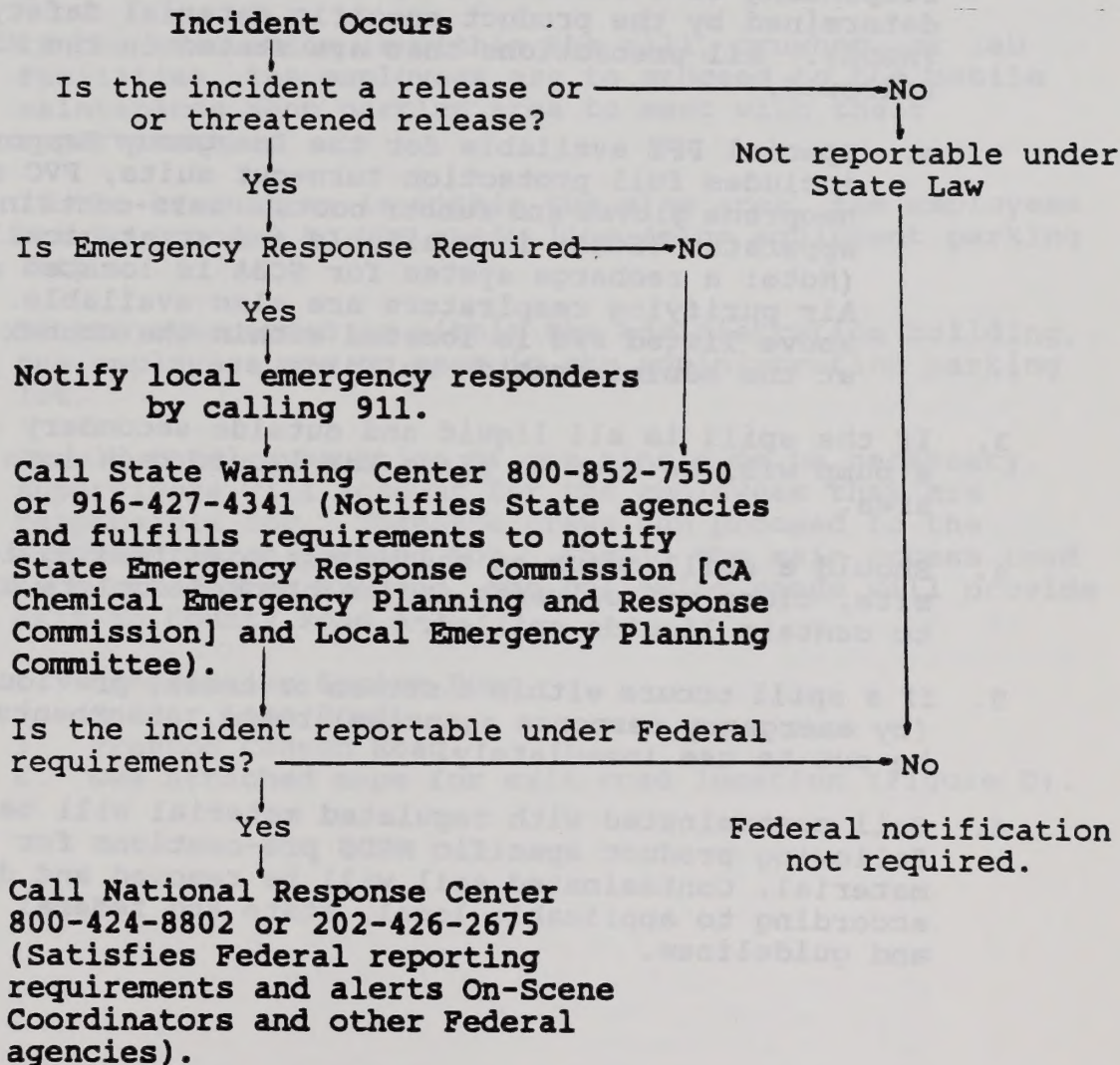
If the appropriate person(s) is not available or cannot be contacted the responsibility to report the incident falls to the superintendent in charge.

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
the Hayden Hill Mine

NOTIFICATION FLOW SHEET

This notification flow sheet is intended to address local, state and federal emergency notification requirements.

Bold letters = Action items



Mitigation

1. If it is determined that there is a release outside secondary containment, then the Emergency Response Team will be called into action and will immediately commence containment and clean up of the spill or release.
2. Personal protective equipment (PPE) is required to be used when responding to a release or spill. The PPE used will be determined by the product specific Material Safety Data Sheet (MSDS). All precautions that are stated in the MSDS will be followed.
 - a. Special PPE available for the Emergency Response Team includes full protection turn-out suits, PVC rain suits, neoprene gloves and rubber boots. Self-contained breathing apparatus (SCBA) is available and strategically located. (Note: a recharge system for SCBA is located on site). Air purifying respirators are also available. (Note: the above listed PPE is located within the connex box located at the Administration building).
3. If the spill is all liquid and outside secondary containment, a pump will be used to place the liquid back into a contained area.
4. Should a spill occur on the access road leading into the mine site, close off culverts and/or blocked outlets are available to contain liquids spilled.
5. If a spill occurs within a stream or creek, previously approved (by emergency response agencies) booms, absorbents, etc., will be put to use immediately.
6. Soil contaminated with regulated material will be handled following product specific MSDS pre-cautions for the spilled material. Contaminated soil will be removed and disposed of according to applicable local, state and federal regulations and guidelines.

Evacuation

1. Should it become necessary to evacuate the facility, the order will be given via telephone system, the mine site radio, or the bullhorn stored in the Security Office.
2. Once employees are notified and understand that there is an order to evacuate, the employees will shut down their machines or equipment and immediately proceed to the nearest exit.
 - a. If the evacuation is within the mill, crusher, or lab facilities, the employees are to proceed to the mobile maintenance shop parking area to meet with their supervisors.
 - b. If the evacuation is within the mine area, the employees are to proceed to the ready line (mine equipment parking lot).
 - c. If the evacuation is within the administration building, the employees are to meet in the administration parking lot.
 - d. Should total evacuation of the mine site be necessary, supervisors will account for the employees they are responsible for. Then the crews can proceed to the administration parking lot. Should the main access road be blocked from exiting, the following roads will provide exit to County Road A-2.
 1. Bunselmeier Spring Road.
 2. Snider Lake Road.
 3. Preston Canyon Road.
 4. See attached maps for exit road location (Figure D).

Emergency Response Assistance

1. The members of the Emergency Response Team will stand by to assist the emergency response agency(s) and offer the benefit of their special knowledge of the facility and its contents.
2. The following members of management will stand by to offer technical advice to the emergency response agency personnel if necessary:
 - a. Jeff White - Environmental Supervisor
 - b. Craig Walters - Loss Prevention Supervisor
 - c. Richard Bohling - Mill Superintendent
 - d. Ron Largent - Mine Superintendent

Mine Emergency Response Team

The Mine Emergency Response Team includes members that have received specialized hazardous materials response training, or are members of the Emergency Medical Response Team, Fire Brigade, and production or facility operators that have specialized knowledge.

Medical Assistance

1. There is an Emergency Medical Response Team on site. The team is made up of individuals who are First Responders or Emergency Medical Technicians (EMTs). In addition, as part of Security personnel job functions, each member of Security will be required to be or to become First Responders or EMTs. This will ensure emergency medical response 24 hours a day, 7 days a week.
2. The Security Office has a well stocked first-aid room. EMT medical kits are available and located in various vehicles. There is one fully equipped emergency mine rescue vehicle on site.
3. Any employee affected by exposure to a hazardous materials release or spill, requiring medical attention, will be transported to Mayers Memorial Hospital (Fall River Mills). This is the nearest medical facility capable of providing appropriate treatment and/or evaluation of chemical related injuries. A copy of the appropriate MSDS, which includes emergency medical and/or first-aid treatment, will accompany the affected person(s) to the hospital.

Fire Protection

1. To protect the site property from potential range fires, a fire line is cut around the project site within the perimeter fence.
2. A water tank containing 100,000 gallons of water has been specifically dedicated for fire protection.
3. Primary fire protection of the administration building, warehouse and lab is through built-in sprinklers. Fire control for other structures is provided by an organized and trained fire brigade.
4. Fire hydrants and assorted sizes of fire extinguishers are strategically located and available for fire suppression. A hose house containing a minimum of two lengths of 2.5 inch hose (75 ft. each), hydrant wrench, fog nozzle, and fire axe is located at each fire hydrant.
5. Heavy equipment available to assist in fire fighting includes the following:
 - 2 track dozers
 - 2 graders
 - 2 water trucks (1-8,000 gallon and 1-10,000 gallon)The 10,000 gallon water truck has a mounted water cannon and fire hose attached.
6. Notification of a range or forest fire can be made to the following regulatory agency by the Emergency Contact Personnel (or designee):

California Department of Forestry (Susanville).....9-1-1

Hazardous Materials Training for Employees

1. All employees receive information regarding the elements and contents included within the Emergency Response Plan, during New Hire Training and Annual Refresher Training. This training follows the programs LGMI established for on site health and safety training. LGMI programs are in accordance with the regulations established by the State of California - General Industry Safety Orders - Title 8 section 5194, Hazard Communication and section 3203, Accident Prevention Program. LGMI programs also meet the Mine Safety and Health Administration (MSHA), 30 CFR 48 section 48.31, hazard training requirements prior to working with hazardous substances.
2. Training is documented by employee's signature on a MSHA 5000-23 training form and/or the appropriate training sheet(s) upon which the employee signs after completing a training session. All training records are maintained in the Loss Prevention Supervisor office.
3. Refresher training is conducted in accordance with California State Laws and federal MSHA required (39 CFR 48 section 48.28) Annual Refresher training. Refresher training is documented and filed.
4. Emergency Response Team members receive special training in the following areas:
 - a. Emergency response procedures
 - b. Incident mitigation
 - c. Hazardous materials handling - first responder training
 - d. Basic first-aid
 - e. Use of air purifying respirators and self-contained breathing apparatus
 - f. Fire prevention - fire fighting techniques
 - g. Drills and mock spill response
 - h. Training in the use of absorbents, gelling agents, foams, and neutralizing agents for clean up
 - i. Other areas as determined

Hazardous Materials Training - Continued

5. Production workers who, as part of their job description, handle hazardous materials, are trained in the safe handling of hazardous materials and procedures to mitigate releases or threatened releases of hazardous materials and other appropriate emergency response actions according to California State law (GISO 5194, Hazardous Communication) and federal MSHA (30 CFR 48 - section 48.27) task training requirements. This training is documented and filed.
6. Designated persons and members of management who are required or responsible for incident reporting, receive training and guidelines to follow in order to report incidents appropriately. This training is documented and filed.

Storage Facilities

1. Secondary containment of sufficient volume to hold the contents of the single largest tank plus 10% is provided at the bulk storage facilities.
2. Bulk storage tanks are subject to scheduled inspections and integrity testing taking into account the type of tank, substance stored, and spill potential.
3. Visual inspections of storage facilities are conducted by personnel using the facility on a regular basis.

Dry Clean Up of Minor Spills

Dry clean up of minor spills will be effected through the use of absorbent materials when applicable and the removal of contaminated soil by equipment. The contaminated soil will be containerized for proper disposal. Neutralization chemicals will be used, if necessary, according to product specific MSDS.

Wet Clean Up of Spills

Spills that can not effectively be handled through dry clean up techniques, will be cleaned up using wet techniques, including the use of pumps and skimmers, as appropriate.

In the event that a spill escapes secondary containment, the spill will be contained through the construction of temporary berms and use of containment booms and surface impoundments, as appropriate.

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for the Hayden Hill Mine

Hazardous Materials Inventory

Material Safety Data Sheets for these and all other products requiring MSDS are available in the Security and Safety Offices.

Gallons = gl.

CAS#	Chemical Name	Common Name	Maximum Quantity	Area
7647010.....	Acid, Hydrochloric...	Muriatic Acid..	6,000 gl.....	Mill
7697372.....	Acid, Nitric.....	Nitric Acid....	9-20gl keg...	Mill
1305788.....	Calcium Oxide.....	Lime.....	300 ton.....	Mill
143339.....	Sodium Cyanide.....	Sodium CN.....	42 ton.....	Mill
1310732.....	Sodium Hydroxide.....	Lye.....	6,000 gl.....	Mill
7440666.....	Zinc.....	Zinc dust A&B..	1 ton.....	Mill

This hazardous materials list follows not only California State requirements, but also meets the reference guidelines by the Federal Superfund Amendments and Reauthorization Act (SARA) - Title III, regarding emergency planning and community right-to-know.

Hazardous Materials Assessment

Acid, Hydrochloric (HCl).

After the gold has been stripped from the carbon, a diluted HCl solution is used to wash the carbon in the regeneration process.

HCl delivered by bulk tanker is stored in an above ground storage tank near the mill facility. The acid delivery and storage area is bermed to contain spillage.

Guidelines if material is released or spilled:

Eliminate all sources of ignition immediately (hydrogen gas may be generated), and provide adequate ventilation. Neutralize with soda ash and slaked lime. Place neutralized spill into the tails pond. Refer to product specific MSDS. CERCLA hazardous substance, reportable quantity (RQ): 5,000 lbs.

Acid, Nitric (HN03).

Concentrated nitric is used to clean scale from equipment. It is contained in 20 gallon stainless steel kegs in which it is delivered and stored within a secondary containment area.

Guidelines if material is released or spilled:

Eliminate all sources of ignition immediately (hydrogen gas may be generated), and provide adequate ventilation. Dike spill with sand or soil. Neutralize with soda ash or sodium bicarbonate and dilute with water. Place neutralized spill into the tails pond. Refer to product specific MSDS. CERCLA hazardous substance, RQ of 1,000 lbs.

Lime (CaO).

Lime is used as a pH regulator. Lime is delivered by truck and pneumatically unloaded into storage silos.

Guidelines if materials is released or spilled:

Avoid contact with water. Sweep up, vacuum, or shovel. Place into the mill or crusher circuits. Refer to specific product MSDS.

Sodium Cyanide (NaCN).

Sodium cyanide is used to dissolve the precious metals in the ore.

Sodium cyanide is delivered in solid form in a tanker. Water and a small amount of sodium hydroxide forming 20 percent sodium cyanide solution is added to briquettes in the tanker. The final solution is pumped to a large storage tank from where it is pumped to the point of use. The make up and storage tanks are contained in a concrete sump large enough to hold the storage tank volume.

Guidelines if material is released or spilled:

Avoid the addition of acid to the spill or leak area. Use protection against contact or inhalation. Decontaminate (liquid) trace cyanide with sodium or calcium hypochlorite solution. Sweep up, shovel and containerize spill (dry) sodium cyanide for proper disposal. Refer to product specific MSDS. CERCLA hazardous substance, RQ of 10 lbs.

Sodium Hydroxide (NaOH).

Also called caustic soda. Used as a pH regulator of mill solution. This is delivered by tanker and stored within a secondary containment area near the mill facility.

Guidelines if material is released or spilled:

Ventilate the area. Carefully neutralize the spill with dilute HCl. Place neutralized spill into tails pond, heap or mill circuits. Refer to product specific MSDS. CERCLA hazardous substances, RQ of 1,000 lbs.

Zinc (dust).

The precious metals in a pregnant solution are precipitated with zinc dust in the refinery area. The zinc dust is delivered in 50 lb. cans and stored on pallets within the mill or warehouse storage areas.

Guidelines if materials is released or spilled:

Avoid all ignition sources and avoid dusting. Salvage and re-use if possible. Take up and containerize for proper disposal. Refer to product specific MSDS.

Chemical Information.

For reference, further chemical information can be obtained by calling CHEMTREC (Chemical Transportation Emergency Center), which maintains technical information on over 100,000 proprietary chemicals. (Figure B).

Conveyance Systems.

Hazardous materials on site are used within the secondary containment of the assay laboratory or the mill. The only exception is the use of sodium cyanide solution. This solution, used outside the mill, is confined to lined ponds, lined conveyance systems or HDPE and steel pipe. These conveyance systems are managed by the mill operations staff and mill maintenance. Should an upset or potential for an upset arise, remedial action will be taken to alleviate the situation.

Revision of Plan

The Emergency Response Plan (ERP) will be reviewed after each incident in order to evaluate its functionalness and need for revisions/amendments. Revision or amendments will also follow the guidelines set forth within AB 2185, if any of the following occurs.

1. A 100 percent or more increase in the quantity of a previously disclosed material.
2. Any handling of a previously undisclosed hazardous material subject to the inventory requirements of this regulation.
3. Change of business address, business name, or business ownership.

Section Two

Spill Prevention, Control, and Countermeasure (SPCC) (40 CFR 112.1)

Policy Statement

The stated policy of [Company Name], Inc. (CNI) is to recognize and accept its responsibility with regard to the prevention of releases of oil and oil products from its facilities. It is the intent of CNI to prevent releases of oil and oil products from its facilities and to respond quickly and effectively in the event of a release.

CNI provides training for its employees and staff with regard to spill prevention and response. CNI also maintains a spill response team that is trained to respond to spills and to coordinate the response effort.

This section describes the spill prevention, control, and countermeasure (SPCC) program that CNI has implemented to prevent releases of oil and oil products from its facilities.

Section Two

Spill Prevention, Control, and Countermeasure Plan

This SPCC plan is designed to prevent releases of oil and oil products from CNI's facilities. It describes the measures that CNI has taken to prevent releases and to respond quickly and effectively in the event of a release.

References to this document are made to CNI's Emergency Response Plan (ERP) and to the SPCC regulations (40 CFR 112.1).

Section Two

Spill Prevention Control and Countermeasures (SPCC) (Petroleum Products)

Policy Statement

The stated policy of Lassen Gold Mining, Inc. (LGMI) is to recognize and accept its responsibilities with regard to the provision of reasonably attainable care in the interest of preventing or minimizing damage to the air, water, and land within and adjacent to its operational boundaries.

LGMI provides training for its employees and staff with regard to present and future preparedness for effective dealing with the prevention and mitigation of incidents.

This section deals specifically with the **Spill Prevention, Control, and Countermeasures** for petroleum products only.

This SPCC was prepared in accordance with 40 CFR 112 (oil pollution prevention). The plan is designed to minimize potential for on site spills while also enabling a quick and efficient response in the event of a petroleum spill.

References in this document are made to LGMI's Emergency Response Plan (section one).

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
Hayden Hill Mine

Professional Engineer Certification

The following Spill Prevention, Control, and Countermeasure (SPCC) Plan was developed in a manner consistent with good engineering practice and all applicable to state and federal requirements.

This plan was reviewed by a registered professional engineer.

This plan has been reviewed, approved and will be implemented as such;

Professional Engineer

Date: JULY 24, 1991

Name (Print): MICHAEL D. ELLIS

Title: ENVIRONMENTAL ENGINEER

Signature: *Michael D. Ellis*

License #: 27101

Stamp:



Spill Prevention Control and Countermeasures (SPCC)

The following are components of LGMIs SPCC plan.

Security

An explanation of the components involved, regarding security measures taken, etc., are contained within the ERP (page 2).

Transportation

An explanation of the components involved, regarding transporter qualifications, transporter spill responsibility, etc., are contained within the ERP (page 3).

Spill Response

In the event of a spill, mine equipment available for spill response includes, but is not limited to, the following:

- a. Dozers: 2-D10
- b. Graders: 1-14G and 1-16G
- c. Loaders: 3-992 and 1-988
- d. Trucks: 10-85 ton haul packs

If a petroleum product spill contaminates surface or groundwater, the National Response Center (NRC) 1-800-424-8802 will be notified.

Further explanation of the components involved, regarding spill response procedures, etc., are contained within the ERP (page 3).

Mitigation

An explanation of the components involved, regarding mitigation procedures, are contained with in the ERP (page 8).

Storage Facilities; Spill Clean Up

An explanation of the components involved, regarding bulk storage/secondary containment, inspections, wet & dry clean up procedures, etc., are contained within the ERP (page 14).

Fuel Requirements

The mining equipment is primarily powered by diesel engines. Estimated diesel fuel consumption per month is 213,000 gallons. In addition, a variety of miscellaneous vehicles, i.e. service trucks, pick-up trucks, vans, etc., consume as estimated 14,000 gallons of gasoline (unleaded). There is an estimated use of 12,500 gallons of new oil.

Summary of fuel requirements:

Diesel.....	213,000 gallons per month
Gasoline (unleaded).....	14,000 gallons per month
Oil (new).....	12,500 gallons per month

Fuel Transport

Project fuel is obtained from a qualified transporter and supplier. The fuel is transported to the site by bulk tanker. Transporters requirements, qualifications, etc., are stated within the ERP (page 3).

Storage Tank Filling

Prior to filling the appropriate storage tank(s), the tank(s) are gauged to avoid overtopping (spilling). The tank(s) are attended to during this operation and the person(s) attending are required to respond immediately (i.e. shut off tank supply valve) should any problem develop during the storage tank filling process.

Fuel Storage

The main fuel storage tank farm, is located southwest of the mobile maintenance and warehouse building. All the bulk storage tanks are within the boundaries of the secondary containment area.

The secondary containment area is constructed of impervious material suitable to prevent ground and/or groundwater contamination. The containment area is constructed of sufficient volume to hold the contents of the single largest tank (20,000 gallons) plus 10 percent.

Bulk Tanks

The bulk tanks within the fuel storage, secondary containment area, consist of the following number of tanks, substance and volume amounts.

1. Coolant:
 - a. 1-1,000 gallon above ground storage tank.
2. Diesel:
 - a. 4-20,000 gallon above ground storage tanks.
3. Gasoline:
 - a. 1-10,000 gallon above ground storage tank.
4. Motor Oil:
 - a. 1-6,000 gallon, 15w-40, above ground oil storage tank.
 - b. 1-6,000 gallon, 10w, above ground oil storage tank.
 - c. 1-1,000 gallon, 50w, above ground oil storage tank.
5. Waste Oil:
 - a. 1-10,000 gallon above ground, waste oil storage tank.
6. Used 55 gallon barrel storage area:
 - a. There is an area within the fuel storage tank farm designated for the storage of at least 45 used barrels.

Petroleum Tanks Located Outside of the Bulk Storage Area

Propane tanks:

1. 1-10,000 gallon tank is located north of the mill building.
2. 1-1,150 gallon tank is located northeast of the assay Lab.
3. 2-1,000 gallon tanks are located west of the mobile maintenance shop.
4. 1-1,000 gallon tank is located north of the administration building.

Petroleum Outside Bulk Storage Area - Continued

Barrels:

New 55 gallon barrels of specialty oils (i.e. transmission fluid, kerosene, etc.) are temporarily stored within a secondary containment area, east of the warehouse building, and located within the warehouse yard. These barrels are controlled by the warehouse department.

Petroleum Product Inventory and Assessment

Coolant.

Anti-freeze/coolant (ethylene glycol) used in vehicular and stationary internal combustion engines. Coolant is stored in an above ground 1,000 gallon tank.

Guidelines to follow if material is released or spilled:

Take up with sand or other noncombustible absorbent material and place into a container for proper disposal. Refer to product specific MSDS.

Fuel, Diesel.

The main fuel used by mining equipment. Storage is within 4-20,000 gallon, above ground storage tanks.

Guidelines to follow if material is released or spilled.

Remove sources of heat or ignition. Contain spill by diking or pitting. Small spills can be contained by using noncombustible absorbents. Take up and containerize for proper disposal. Refer to product specific MSDS.

Fuel, Gasoline (unleaded).

The main fuel used by support equipment. Storage is within 1-10,000 gallon above ground storage tank.

Guidelines to follow if material is released or spilled:

Remove sources of heat or ignition. If spill has not ignited, use water spray to disperse vapors and to protect personnel attempting to stop or contain the spill. Small spills can be contained by using noncombustible absorbents. Take up and containerize for proper disposal. Refer to product specific MSDS.

Oils:

Oils (hydraulic, engine, gear) are used in various items of mobile equipment and is stored in three (1-1,000/2-6,000 gallon) above ground storage tanks.

Guidelines to follow if material is released or spilled:

Remove sources of heat and ignition. Contain and pick up spill if possible. Use inert absorbents for small spills. Take up and containerize for proper disposal. Refer to product specific MSDS.

Propane:

Source of heating within various facilities.

Guidelines to follow if material is released or spilled:

Eliminate source (stop flow). Remove sources of heat or ignition. If release has not ignited, use water spray to knock down vapors. Refer to product specific MSDS.

Waste Oil Transportation

California's Hazardous Waste Control Law (HWCL, Health and Safety Code, sections 25100 through 25249) and its implementation of the Resource Conservation and Recovery Act (RCRA, 42 USC, sections 6901 through 6987) requires cradle to grave waste management (including transportation & recycling) and therefore LGMI critically reviews transporter qualifications and recycling site program(s) and reputation(s) prior to making arrangements for the recycling of LGMI's waste products.

As stated in LGMI's ERP (page 3) transporters are expected to follow all EPA and DOT regulations.

Training

An explanation of the components involved, regarding employee training, hazard training, documentation, etc., is contained within the ERP (page 12).

LEGEND:

PRIMARY ROUTES 9 & 11
SECONDARY ROUTE
TERTIARY ROUTE

ROADS
RAILROADS
WATERWAYS



Section Three
Figures

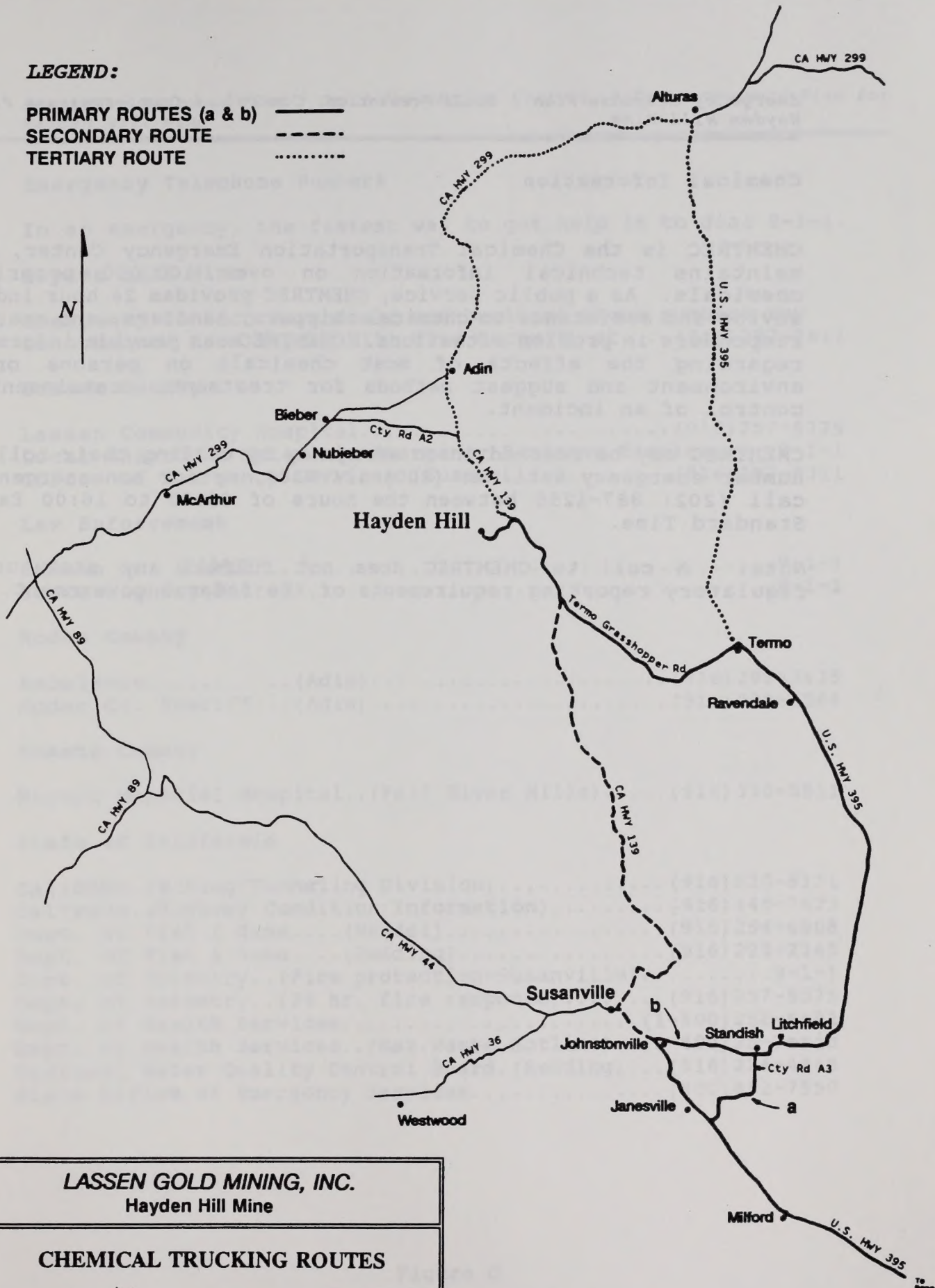
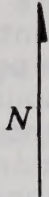
LASSEN GOLD MINING CO.
Hayden Hill Mine

CRIMINAL TRUCKING ROUTES

62/August 1991

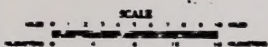
LEGEND:

PRIMARY ROUTES (a & b) ———
 SECONDARY ROUTE - - - - -
 TERTIARY ROUTE
 CA HWY 299
 U.S. HWY 395
 CA HWY 139
 CA HWY 89
 CA HWY 44
 CA HWY 36
 Cty Rd A2
 Terno Grasshopper Rd
 Cty Rd A3
 a
 b



LASSEN GOLD MINING, INC.
 Hayden Hill Mine

CHEMICAL TRUCKING ROUTES



KB/August 1991

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
Hayden Hill Mine

Chemical Information

CHEMTREC is the Chemical Transportation Emergency Center, which maintains technical information on over 100,000 proprietary chemicals. As a public service, CHEMTREC provides 24 hour industry advise and assistance to chemical shippers, handlers, and emergency responders in problem situations. CHEMTREC can provide information regarding the effects of most chemicals on persons or the environment and suggest methods for treatment, containment and control of an incident.

CHEMTREC may be reached in an emergency by calling their toll free number emergency hotline: (800) 424-9300, or for non-emergencies, call (202) 887-1255 between the hours of 09:00 to 16:00 Eastern Standard Time.

Note: A call to CHEMTREC does not fulfill any statutory or regulatory reporting requirements of the federal government.

Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
Hayden Hill Mine

Emergency Telephone Numbers

In an emergency, the fastest way to get help is to dial 9-1-1.

Hayden Hill Mine

Emergency Contact Personnel; non-business phone numbers may
be obtained from Hayden Hill Mine Security at....(916)257-2411

Lassen County

Lassen Community Hospital.....(916)257-5325
Local Hazardous Materials Emergency Response Service.....9-1-1
Office of Emergency Services (Susanville).....(916)257-8311

Law Enforcement

Lassen Co. Sheriff.....9-1-1
State Highway Patrol.....9-1-1

Modoc County

Ambulance.....(Adin).....(916)299-3435
Modoc Co. Sheriff...(Adin).....(916)299-3564

Shasta County

Mayers Memorial Hospital..(Fall River Mills).....(916)336-5511

State of California

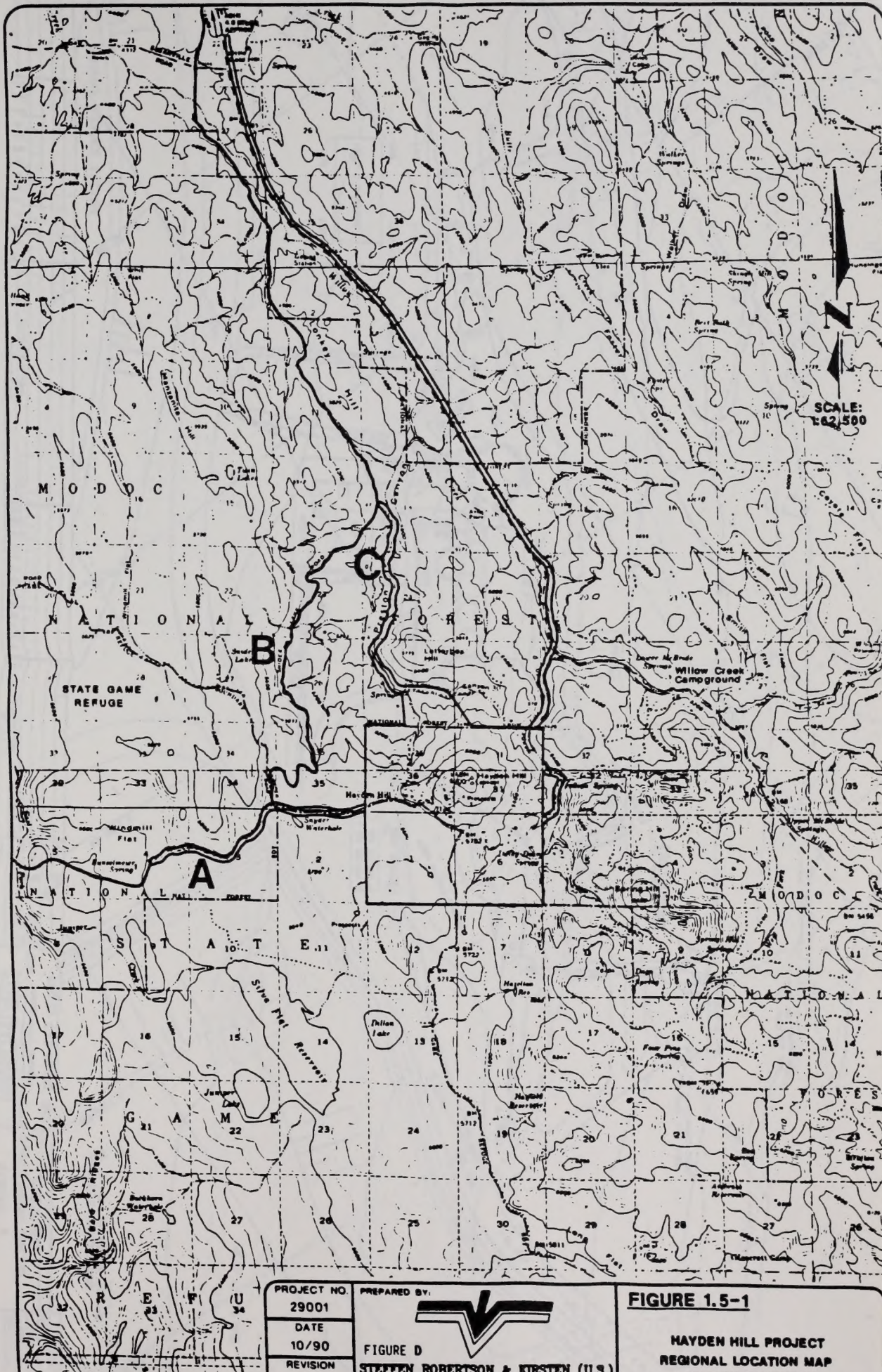
Cal/OSHA.(Mining/Tunneling Division).....(916)920-6131
CalTrans.(Highway Condition Information).....(916)445-7623
Dept. of Fish & Game....(Wendel).....(916)254-6808
Dept. of Fish & Game....(Redding).....(916)225-2365
Dept. of Forestry..(Fire protection-Susanville).....9-1-1
Dept. of Forestry..(24 hr. fire response).....(916)257-5575
Dept. of Health Services.....(1-800)258-6492
Dept. of Health Services..(Haz.Waste Hotline)..(1-800)25-Toxic
Regional Water Quality Control Board.(Redding)...(916)224-4848
State Office of Emergency Services.....(800)852-7550

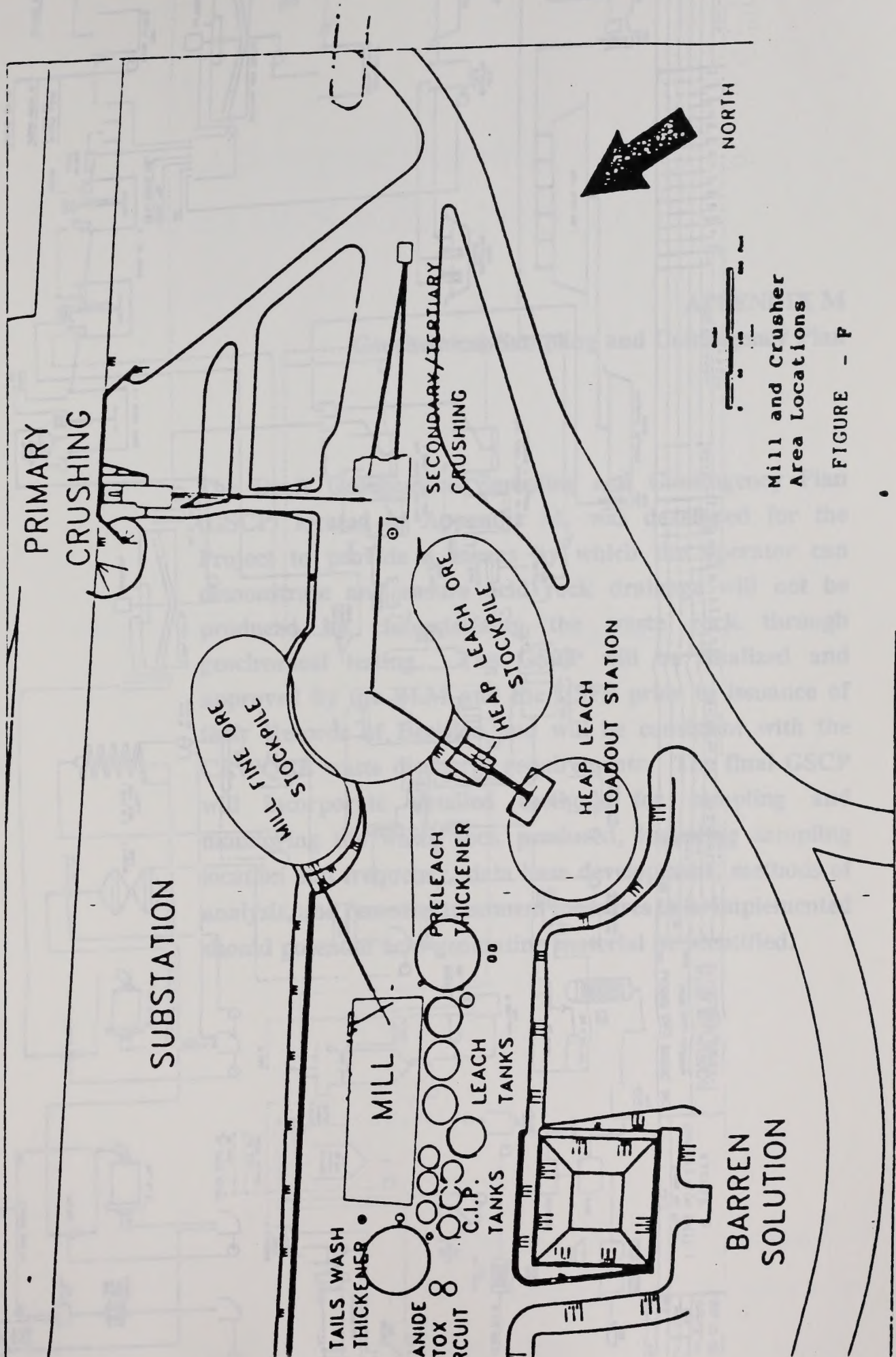
**Emergency Response Plan / Spill Prevention, Control, & Countermeasure Plan for
Hayden Hill Mine**

Emergency Telephone Numbers - Continued

U. S. Government

Bureau of Land Management (Susanville).....(916)257-5381
EPA - Region 9.....(415)744-1994
MSHA, Reno Field Office.....(702)784-5892
MSHA, Western District Office (Alameda, CA.).....(415)273-7457
National Response Center...(24-hr. number).....(202)426-2675
National Response Center...(Alternate number).....(800)424-8802





Mill and Crusher
Area Locations

FIGURE - P

LASSEN GOLD MINING, INC.
HAYDEN HILL PROJECT

APPENDIX M
Geochemical Sampling and Contingency Plan

The Draft Geochemical Sampling and Contingency Plan (GSCP) located in Appendix M, was developed for the Project to provide a means by which the operator can demonstrate and ensure acid rock drainage will not be produced by characterizing the waste rock through geochemical testing. The GSCP will be finalized and approved by the BLM and the USFS prior to issuance of their Records of Decision and will be consistent with the CRWQCB waste discharge requirements. The final GSCP will incorporate detailed methods for sampling and monitoring the waste rock produced, including sampling location and frequency, data base development, methods of analysis, and remedial treatment measures to be implemented should potential acid generating material be identified.

AUGUST 1991

08/24/91

Denver Knight Piesold
Geotechnical Consultants, Inc.

LASSEN GOLD MINING, INC. HAYDEN HILL PROJECT

DATA
1074-5700
AUGUST 14, 1991

GEOCHEMICAL SAMPLING AND CONTINGENCY PLAN HAYDEN HILL PROJECT LASSEN COUNTY, CALIFORNIA

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Date

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AUGUST, 1991

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5.0 REFERENCES

DKP1074

Denver Knight Piésold

ENVIRONMENTAL CONSULTANTS, INC.

GEOCHEMICAL SAMPLING AND CONTINGENCY PLAN
HAYDEN HILL PROJECT
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GEOCHEMICAL SAMPLING AND CONTINGENCY PLAN
HAYDEN HILL PROJECT
LASSEN COUNTY, CALIFORNIA

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**GEOCHEMICAL SAMPLING AND CONTINGENCY PLAN
HAYDEN HILL PROJECT
LASSEN COUNTY, CALIFORNIA**

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The Geochemical Sampling and Contingency Plan defines a program for ongoing sampling and analysis designed to address fluctuations in geochemical characteristics of materials mined from the Hayden Hill Project. It establishes an action plan to mitigate against potential generation of acid rock drainage beyond current site limits from materials generated by mine development. The plan is structured to be consistent with the project Mitigation Compliance Program prepared for Lassen County in December of 1987, but should be dynamic and subject to revision as data and experience with the plan is gained.

1.1 Project Location and Description

The Hayden Hill Project is located approximately 120 air miles north-northwest of Reno, Nevada, and about 15 miles south of Arden, in Lassen County, California as shown on Figure 1. Specifically, the project is located near the southeast corner of Townships 36 and 37 and Ranges 9 and 10.

**GEOCHEMICAL SAMPLING AND CONTINGENCY PLAN
HAYDEN HILL PROJECT
LASSEN COUNTY, CALIFORNIA**

1.0 INTRODUCTION AND BACKGROUND

The California Water Regulations require anyone proposing to discharge waste to the land to adequately characterize the waste streams with respect to their potential to release pollutants to the environment. Protocol for characterizing mining wastes is included in Subchapter 15 of these regulations. Lassen Gold Mining, Inc. (LGMI) has characterized the wastes to be generated by the Hayden Hill Project according to the Subchapter 15 protocol. The Geochemical Sampling and Contingency Plan provides a production phase program of waste material monitoring to regularly verify consistency of the wastes being produced with the pre-development characterization.^{1,2,3,4}

The Geochemical Sampling and Contingency Plan defines a program for ongoing sampling and analysis designed to address fluctuations in geochemical characteristics in materials mined from the Hayden Hill deposit. It establishes an action plan to mitigate against potential generation of acid or metal-rich leachate beyond certain set points from materials generated by mine development. The plan is structured to be consistent with the project Mitigation Compliance Program prepared for Lassen County in December of 1990⁵, but should be dynamic and subject to revision as data and experience with the plan is gained.

1.1 Project Location and Description

The Hayden Hill Project is located approximately 120 air miles north-northwest of Reno, Nevada, and about 15 miles south of Adin, in Lassen County, California as shown on Figure 1. Specifically, the project is located near the common corners of Townships 36 and 37 and Ranges 9 and 10.

The Hayden Hill Project is centered on and around Hayden Hill, a topographic knob that has been mined since 1869. The Project consists of an open pit with two ore zones, processing plant, heap leaching facility, waste rock disposal area, and miscellaneous structures and facilities necessary to support the mining operation. The general site layout is shown on Figure 2.

The mines will be developed by conventional open pit method and will produce an estimated 9.6 million tons of mill grade ore and 35.8 million tons of leach grade ore. An estimated 87.5 million tons of overburden and waste rock will be produced over the life of the mine. Ore will be processed by carbon-in-pulp milling and cyanide heap leaching. The project is expected to impact approximately 970 surface acres over some 8 years of production life.

1.2 Waste Characterization Data Summary

Mining wastes to be generated by the Hayden Hill Project consist of waste rock, spent leach ore, and tailings from the milled ore. The character of these waste streams has been predicted by geologic and mineralogic investigation, interpretation and analytical testing. The placement, location and degree of design containment of the waste storage facilities is based on the classification of each waste.

Core samples of ore and waste from each of the two zones, Providence and Lookout, were composited based on pit design and the oxidation state. The composites were evaluated by a California registered geologist and determined to be representative of materials that will be produced from the mines.¹

Chemical analyses were conducted on each waste stream for inorganic persistent and bioaccumulative toxicants. The total and soluble threshold limit concentrations (TTLC and STLC respectively) for these toxicants are established in the California Administrative Code Title 22, Chapter 30, Article 11, Section 66699. STLC and TTLC values for unprocessed Hayden Hill waste streams are included as Tables 1 and 2¹. STLC and TTLC values comparing head ore

values with tailings and detoxified tailings are included as Tables 3 and 4⁴. Results suggest that all waste rock and ore samples, whether head ore or process waste, had toxicant concentrations well below the regulatory limits for STLC and TTLC.

Analyses were conducted for acid producing potential (APP) and acid neutralizing potential (ANP). The results of static APP and ANP tests are included as Tables 5¹, 6³ and 7⁴. Because some of the rock types from the Lookout Pit were found to have a low net acid production potential, kinetic humidity cell tests were conducted on composite samples of waste rock and detoxified spent mill ore. While the static tests exhibited some potential for acid generation, the kinetic tests showed minimal potential to produce acid.

Hayden Hill waste streams have been characterized as Group C wastes under the Subchapter 15 classification protocol.¹ The use of cyanide, a federally listed hazardous chemical, mandates a more rigorous hazard classification during the operational phase for mill and leach materials. In this regard, liner systems for mill tailings and leach pads are designed to meet Group B criteria during operation.² Successful cyanide removal or destruction will allow the closure of these facilities under Group C criteria.

2.0 GEOCHEMICAL VERIFICATION PROGRAM

The geochemical verification program establishes the procedure for ongoing monitoring of the wastes produced by mine development. It is structured to provide sufficient and timely geochemical data for demonstrating consistency with the established classifications for each Hayden Hill waste stream. Because mill and heap leach wastes are stored in facilities designed for Group B containment, analysis need only be performed on a periodic basis to verify consistency. Waste rock, however, will be placed into a Group C facility. In this regard, the monitoring of waste rock geochemistries concurrent with waste production is important to confirm that wastes being placed into the disposal area meet Group C criteria.

The ore deposit will be mined by conventional open pit mining techniques. With the open pit method, all ore, low grade rock and non-mineralized rock is removed from the pit in horizontal slices or benches. Benches are excavated by drilling on a designated pattern, then loading and shooting the holes with explosives. During mining, samples are routinely taken and analyzed in the laboratory to determine what areas of the bench contain mill ore, leach ore or waste rock.

Fire assays are typically run on the drill hole samples to determine the precious metal content at each discrete location in the bench. These analyses occur before the pattern is excavated. Based on the analytical results, the blast-hole pattern is flagged to identify which material is mill ore, leach ore or waste rock. Based on these flagging conventions, equipment operators immediately know where the material should be placed.

The verification program focuses on establishing an ongoing monitoring protocol for waste rock due to material placement in the Group C containment facility. The objective of the verification program is to monitor both the physical and chemical make-up of production wastes for use in evaluating those properties as they may relate to the behavior of the material in the environment.

2.1 Waste Rock

Waste rock will be monitored on a regular basis for physical properties as determined by field identification of geologic characteristics. Chemical properties will be identified by regular in-house analytical testing and periodic analytical verification by a California-certified laboratory.

2.1.1 Physical Monitoring

Field monitoring of the physical characteristics of the materials being excavated can be an effective tool in predicting the geochemical behavior of mine wastes. Geologic changes within a given bench or mine area can often be identified and segregated through visual examination by a qualified individual.

The mine geologist will be responsible for maintaining a record of the physical characteristics of the materials produced from the mine. A database of these characteristics will be developed which documents:

- o color, texture or notable changes in physical appearance;
- o mineralogy and the condition or form of any identifiable pyrite;
- o oxidation or alteration state; and
- o any geologic, lithologic or structural features which may have an affect on the material being generated.

2.1.2 Chemical Monitoring

Blast-hole samples will be used for daily verification monitoring and waste placement. Other samples will be taken for additional testing and correlation studies. Samples will be obtained from drill hole cuttings by placing a sample container adjacent to the drill stem prior to commencement. Sample sizes will vary depending on bench thickness and sample recovery. Samples will be placed in suitable sample containers and delivered to the LGMI laboratory for preparation and analyses.

When the analytical results of blast-hole samples suggest the presence of waste rock in a blast pattern, a sample will be composited from each blast-hole sample defined as waste. Compositing is appropriate due to the inherent mixing associated with excavation and placement of the waste rock in the disposal area.

A sample of the composited waste rock splits will be analyzed for sulfur content before the blast pattern is mined. Analytical results will be used to provide an "early warning" for materials which may have the potential to generate acid. The set point of 0.5 percent total sulfur was established as the action level, based on the analytical results of the pre-development characterization program.^{1,2,3}

In-house sulfur testing will be accomplished using a LECO sulfur analyzer. Samples exhibiting sulfur contents greater than 0.5 percent will be selectively handled as described in Section 3.2. Samples with sulfur values less than 0.5 percent will be placed in the waste rock disposal area without special handling.

In-house humidity cell testing will be periodically conducted on waste rock. The goal of this additional testwork will be to quantify the behavior of materials over a range of sulfur values under weathering conditions. This information will complement the existing database for sulfur values exceeding 0.5 percent, and add to the existing data for the lower sulfur values. The frequency and duration of these tests will be determined based on geochemical and physical monitoring results, and the correlations between the two.

2.1.3 Correlation of Monitoring Results

Results of the waste rock physical and chemical monitoring programs will be integrated, evaluated, summarized and communicated to the appropriate agencies in a manner which is consistent with the Mitigation Compliance Program.⁵ The focus of this correlation is to develop a means of visually and chemically identifying material characteristics which may exhibit distinctive behavior in the environment. The information developed through the correlative program should provide a database for rapid determination of waste characteristics at Hayden Hill; and may lead to the development of a third, marginal, class of wastes that would have different treatment and/or placement criteria.

2.2 Mill Tailings

Mill tailings will be sampled on an ongoing basis due to the potential variation in process chemistries. Sampling frequency will be every day and composited on a monthly basis. A sample size of about 250 milliliters of slurry at a production rate of 3,500 tons per day approximates about one pound of tailings solid per 10,000 tons of ore processed.

The monthly composite samples will be filtered and the solid portion retained. If the mine geologist determines that the ore types were changing during a sampling quarter, the monthly samples will be analyzed individually. If ore types were relatively consistent during the quarter, the three monthly samples will be composited into a single sample for analysis.

Composite samples will be sent to a California-certified analytical laboratory as described in Section 4.0.

2.3 Spent Leach Residue

Leach ore will not be sampled on an ongoing basis, but rather as a single sampling program for each leach pad cell after LGMI has completed rinsing and detoxification. The waste classification for leach material is driven by the use of a listed hazardous chemical rather than by the character of the actual waste material. Waste characterization verification will be accomplished after completion of the final rinsing for each individual heap cell by collecting a one-pound residue sample for every 100,000 tons of residue in the heap. This frequency results in a sampling grid on 150 foot centers over the surface of the detoxified heap. Samples will be collected from auger borings or other penetrating methods.

Composite samples for each heap cell will be sent to a California-certified analytical laboratory as described in Section 4.0.

3.0 CONTINGENCY PLAN DETAILS

Waste rock will be placed in the disposal area either as non-selective or selective waste. The pre-development characterization testwork suggests a conservative set point of 0.5 percent. This set point will be refined with further testing and data analysis. Non-selective waste will consist of rock with total sulfur values less than the set point value. Selective waste will include all rock with sulfur values exceeding the set point.

LGMI will conduct tests to determine the feasibility of base additives such as phosphate rock, lime or apatite on mine wastes. These test procedures could be used to demonstrate acid mitigation techniques on run-of-mine wastes. Successful test results may suggest an acceptable program for treating and placing selective wastes using non-selective placement techniques.

3.1 Normal Placement of Waste Rock

Waste rock will be placed in the disposal area by mine haul trucks and allowed to slope at the natural angle of repose. The disposal area will be constructed with benches resulting in an effective slope of about three horizontal to one vertical.

3.2 Selective Placement

Waste rock identified as having sulfur exceeding the established set point will be selectively placed within the waste rock disposal area. This action physically isolates the selective waste from the non-selective waste, and minimizes the potential for selective waste to be affected by percolating meteoric water, ground water and air.

Figure 3 shows a typical "cell" designed to isolate the selective waste within the waste rock disposal area. Lifts of selective waste will be placed beginning on the northern end of the facility, working southward on an "as needed" basis. Selective waste may be placed in any waste rock lift provided that the selective design features are incorporated into the construction.

A zone of non-selective waste from the previous lift will have been sloped and compacted in-place by normal mining activities to provide a barrier layer between the non-selective and selective waste. Suitability of the compacted zone will be verified by LGMI engineering personnel prior to placement of selective waste.

A zone of non-selective waste rock will also be placed on the outer face of each bench to eliminate direct exposure of selective wastes to air and water. The non-selective waste can be dozed into place or placed concurrent with the selective waste. No selective waste material will be placed in contact with original ground.

Each selective waste cell will be covered with soil and/or plant growth media and will be nominally sloped to promote runoff. Soil cover thickness will be consistent with all other reclamation commitments, but in no case will be less than one foot.

4.0 QUALITY ASSURANCE

Third party chemical verification testing will be conducted once a month for the first three months of operation and at least quarterly thereafter on representative samples of the mill and mine wastes. Similar testing will be conducted on spent leach residue as described in Section 2.3.

Samples will be sent to a California-certified analytical laboratory for standard static acid/base accounting and ICP analysis of the solution from a California Waste Extraction Test (WET). The WET test procedure is defined in the California Code of Regulations, Title 22, Division 4, Chapter 30, Article 11, Part 66700. Analytical frequency will normally be quarterly, but may be adjusted as necessary to account for changing geologic conditions or as experience is gained with the verification program. Chain-of-custody documentation will be included with the samples.

Analytical results from the quality assurance program will be compared with the in-house program results to verify consistency. If the external laboratory results suggest a different material classification than the in-house results, a duplicate sample will be sent to a second certified laboratory. As a second component of the quality assurance program, an annual audit of the procedures for sample acquisition will be conducted by a third party. The purpose of the audit is to verify the adequacy and correctness of the in-house monitoring program.

The correlation among physical, chemical and third-party verification sampling data will be reported to the appropriate agencies in a manner which is consistent with the Mitigation Compliance Program⁵.

5.0 REFERENCES

- ¹ Waste Classification Report, Denver Knight Piesold Environmental Consultants, Inc., January, 1990.
- ² Report of Waste Discharge, Denver Knight Piesold Environmental Consultants, Inc., August, 1990.
- ³ Waste Rock Humidity Cell Test Report, Denver Knight Piesold Environmental Consultants, Inc., November, 1990.
- ⁴ Report on Waste Characteristics of Detoxified Spent Mill Ore, Denver Knight Piesold Environmental Consultants, Inc., April, 1991.
- ⁵ Draft - Mitigation Compliance Program, Steffen Robertson and Kirsten (U.S.), Inc., April, 1991.

TABLE 1

TABLE 1-2

Table 1: Typical Persistent and Bioaccumulative Substances
 in Mine Wastes
 CHM Hill Laboratory Results
 (in Micrograms per Liter)

CONSTITUENT	ECLC-01	Location FV			Parkinson FV		
		Water	Leach	MUD	Water	Leach	MUD
		FW-1	FW-1	FW-1	FW-1	FW-1	FW-1
Antimony	15	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Arsenic	5.0	0.55	0.40	1.4	<0.28	<0.28	<0.28
Baryum	100	4.3	4.7	3.32	3.21	2.49	7.39
Beryllium	0.75	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium	1.0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Chromium	560	0.33	0.48	1.7	0.07	0.11	1.1
Cobalt	85	0.25	0.14	0.17	0.20	0.20	<0.14
Copper	25	0.30	0.24	0.35	0.07	0.08	0.21
Lead	5	<0.6	<0.6	<0.6	<0.04	<0.3	0.50
Mercury	0.2	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Molybdenum	150	<0.05	<0.02	<0.08	<0.04	<0.15	<0.02
Nickel	20	<0.78	<0.70	<0.14	<0.76	<0.28	<0.20
Selenium	1.0	<0.05	<0.05	<0.05	<0.04	<0.08	<0.05
Silver	3	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Thallium	1.0	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Vanadium	24	0.21	0.09	0.34	0.43	0.47	0.25
Zinc	250	0.50	0.47	0.85	0.43	0.64	1.2

(1) ECLC values from California Administrative Code Title 22, Chapter 20, Article 11, Section 50201.

All test were run using Method 8000, except Mercury and Selenium, which used Method 8030 and 7460 respectively.

TABLE 1

74TBLS.1-2

**Soluble Inorganic Persistent and Bioaccumulative Substances
Mine Wastes
CH₂M Hill Laboratory Results
(milligrams per liter)**

<u>CONSTITUENT</u>	<u>STLC(1)</u>	<u>Lookout Pit</u>			<u>Providence Pit</u>		
		<u>Waste</u>	<u>Leach</u>	<u>Mill</u>	<u>Waste</u>	<u>Leach</u>	<u>Mill</u>
		<u>LW-1</u>	<u>LHC-1</u>	<u>LMC-1</u>	<u>PW-1</u>	<u>PHO-1</u>	<u>PMO-1</u>
Antimony	15	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Arsenic	5.0	0.56	0.40	1.4	<0.28	<0.28	<0.28
Barium	100	1.3	1.7	3.52	3.22	2.49	7.39
Beryllium	0.75	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium	1.0	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Chromium	560	0.22	0.48	1.7	0.07	0.11	1.1
Cobalt	80	0.25	0.14	0.17	0.20	0.20	<0.14
Copper	25	0.20	0.24	0.35	0.09	0.09	0.21
Lead	5	<0.6	<0.6	<0.6	<0.06	<0.6	0.90
Mercury	0.2	<0.002	<0.002	<0.002	<0.002	0.006	<0.002
Molybdenum	350	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Nickel	20	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Selenium	1.0	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Silver	5	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Thallium	7.0	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Vanadium	24	0.21	0.09	0.34	0.42	0.47	0.52
Zinc	250	0.80	0.47	0.86	0.44	0.64	1.2

(1) STLC values from California Administrative Code Title 22, Chapter 30, Article 11, Section 66699.

All tests were run using Method 6010, except Mercury and Selenium, which used Method 7470 and 7740 respectively.

TABLE 2

74TBLS.1-2

**Total Inorganic Persistent and Bioaccumulative Substances
Mine Wastes
CH₂M Hill Laboratory Results
(milligrams per kilogram)**

<u>CONSTITUENT</u>	<u>TTLIC(1)</u>	<u>Lookout Pit</u>			<u>Providence Pit</u>		
		<u>Waste</u>	<u>Leach</u>	<u>Mill</u>	<u>Waste</u>	<u>Leach</u>	<u>Mill</u>
		<u>LW-1</u>	<u>LHC-1</u>	<u>LMC-1</u>	<u>PW-1</u>	<u>PHO-1</u>	<u>PMO-1</u>
Antimony	500	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Arsenic	500	98.1	134	136	25.2	34.6	39.0
Barium	10000	13	24.6	43.5	33.6	34.9	98.9
Beryllium	75	0.4	0.4	0.4	0.6	0.8	0.9
Cadmium	100	<0.4	<0.4	<0.4	<0.4	<0.4	0.7
Chromium	2500	6.1	17	69.5	3.3	4.2	57.0
Cobalt	8000	3.7	<1.4	2.9	1.7	2.8	<1.4
Copper	2500	14	15	17	5.5	8.6	12
Fluoride	18000	61.3	35.6	49.7	96.9	75.0	96.2
Lead	1000	<6.0	9.6	<6.0	7.4	13	46.2
Mercury	20	0.84	0.67	0.91	0.70	2.5	5.04
Molybdenum	3500	2.1	1.8	1.5	1.6	2.1	1.3
Nickel	2000	<2.8	<2.8	3.8	<2.8	<2.8	<2.8
Selenium	100	<8	<8	<8	<8	<8	<8
Silver	500	2	10	25.1	<1.4	4.5	17
Thallium	700	<8	<8	<8	<8	<8	<8
Vanadium	2400	23.0	17	18	18	23.0	19
Zinc	5000	24.4	22.3	19	37.6	44.8	100

(1) TTLIC values from California Administrative Code Title 22, Chapter 30, Article 11, Section 66699.

All tests were run using Method 6010, except Fluoride, Mercury and Selenium, for which Methods 340.1,2, 7470 and 7740 respectively were used.

74TBL3.3-4

TABLE 3
 SOLUBLE INORGANIC PERSISTENT AND BIOACCUMULATIVE SUBSTANCES
 HEAD ORE⁽¹⁾; TAILINGS⁽²⁾; AND SPENT ORE⁽³⁾, DETOXIFIED WITH EITHER SO₂ OR Cl₂

CONSTITUENT	STLC (4)	Head Ore LMC ⁽¹⁾	Head Ore LHC ⁽¹⁾	Tailings (2)	Detoxified Spent Ore ⁽³⁾			
					Low Grade		High Grade	
					SO ₂	Cl ₂	SO ₂	Cl ₂
Antimony	15	<0.4	<0.4	<0.4	<0.20	<0.20	<0.20	<0.20
Arsenic	5.0	1.4	0.4	0.43	0.66	2.05	0.80	0.74
Barium	100	3.52	1.7	1.8	1.4	1.4	2.18	1.80
Beryllium	0.75	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium	1.0	<0.04	<0.04	<0.04	<0.02	<0.02	<0.02	<0.02
Chromium	560	1.7	0.48	0.27	0.47	0.40	0.74	0.68
Chromium VI				<0.01	<0.05	<0.05	<0.01	<0.01
Cobalt	80	0.17	0.14	0.17	0.1	0.08	0.18	0.19
Copper	25	0.35	0.24	1.5	0.61	<0.06	1.48	1.54
Fluoride					0.08	0.08	0.06	0.07
Lead	5	<0.6	<0.6	<0.6	<0.5	<0.5	<0.5	<0.5
Mercury	0.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Molybdenum	350	<0.08	<0.08	<0.08	0.1	<0.1	0.2	<0.1
Nickel	20	<0.28	<0.28	<0.28	0.38	0.40	0.53	0.37
Selenium	1.0	<0.08	<0.08	<0.08	<0.032	<0.032	<0.032	<0.032
Silver	5	<0.14	<0.14	<0.14	<0.06	<0.06	<0.06	<0.06
Thallium	7.0	<0.4	<0.4	<0.4	<0.26	<0.26	<0.26	<0.26
Vanadium	24	0.34	0.09	0.09	0.1	0.29	0.17	0.18
Zinc	250	0.86	0.47	0.85	0.41	0.50	1.21	0.98

(1) Head Ore from Waste Classification Report, Table 6, analyses by CH₂M Hill.(2) Tailings from Report of Waste Discharge, Table 4, analyses by CH₂M Hill.(3) Processing and detoxification done by Hazen, analyses by CH₂M Hill.

(4) STLC values from California Administrative Code Title 22, Chapter 30, Article 11, Section 66699.

TABLE 4
TOTAL INORGANIC PERSISTENT AND BIOACCUMULATIVE SUBSTANCES
HEAD ORE⁽¹⁾; TAILINGS⁽²⁾; AND SPENT MILL ORE⁽³⁾, DETOXIFIED WITH EITHER SO₂ OR Cl₂

Constituent	TTLC (4)	Head Ore LMC ⁽¹⁾	Head Ore LHC ⁽¹⁾	Tailings (2)	Detoxified Spent Ore ⁽³⁾			
					Low Grade		High Grade	
					SO ₂	Cl ₂	SO ₂	Cl ₂
Antimony	500	<4.0	<4.0	<0.4	3.3	3.3	5.5	6.1
Arsenic	500	136	134	119	132	121	146	155
Barium	10000	43.5	24.6	32	27.0	22.7	36.9	37.2
Beryllium	75	0.4	0.4	0.2	<0.2	0.2	0.2	0.2
Cadmium	100	<0.4	<0.4	<0.4	<0.2	0.2	0.2	0.4
Chromium	2500	69.5	17	59.6	65.2	52.7	44.1	46.5
Chromium VI				<500				
Cobalt	8000	2.9	<1.4	2.9	2.4	2.1	3.1	3.2
Copper	2500	17	15	29.3	22.3	12	31.9	32.2
Fluoride	18000	49.7	35.6		22.5	31.5	37.4	31.1
Lead	1000	<6.0	9.6	7.0	<5.0	<5.0	8.6	11
Mercury	20	0.91	0.67	0.68	0.62	0.52	0.93	0.87
Molybdenum	3500	1.5	1.8	6.9	8.6	6.5	6.2	6.7
Nickel	2000	3.8	<2.8	34.0	35.3	28.7	21.6	24.0
Selenium	100	<8	<8	<8	0.33	0.26	0.36	0.41
Silver	500	25.1	10	6.5	2.3	2	9.0	6.1
Thallium	700	<8	<8	<8	0.36	0.40	1.38	1.28
Vanadium	2400	18	17	16	16	14	17	17.9
Zinc	5000	19	22.3	45.4	15	15	24.9	24.3

(1) Head Ore from Waste Classification Report, Table 7, analyses by CH₂M Hill.

(2) Tailings from Report of Waste Discharge, Table 5, analyses by CH₂M Hill.

(3) Processing and detoxification done by Hazen, analyses by CH₂M Hill.

(4) TTLC values from California Administrative Code Title 22, Chapter 30, Article 11, Section 66699.

TABLE 5

**Acid Generation/Neutralization Potential
Mine Wastes
CH₂M Hill Laboratory Results**

Test	Lookout Pit			Providence Pit		
	Waste LW-1	Leach LHC-1	Mill LMC-1	Waste PW-1	Leach PHO-1	Mill PMO-1
Neutral Potential (1,4)	0.9	<0.3	<0.3	3.3	3.4	2.8
Potential Acidity (2,5)	4.7	7.5	2.4	1.7	1.0	5.4
Net Acid Neutral. Potential (3)	-3.8	-7.5	-2.4	1.6	2.4	-2.6
Peroxide Sulfur, in % (5)	0.15	0.24	0.08	0.06	0.03	0.17

- (1) Tons of CaCO₃ equivalent in 1000 tons of material.
- (2) Tons of CaCO₃ required to neutralize 1000 tons of material.
- (3) Excess tons of CaCO₃ in 1000 tons of material.
- (4) Sobek et al., EPA-600/2-78-054, Method Number 3.2.3.
- (5) Sobek et al., EPA-600/2-78-054, Method Number 3.2.11.

TABLE 6

**Acid Generation/Neutralization Potential
for Mine Wastes Used in Humidity Cell Tests
Core Laboratories' Results**

TEST	PWC	LWC	LWOC	LWSC	LWMC
SULFUR, IN %					
Peroxide S (1)	<0.01	<0.01	<0.01	<0.01	0.20
Pyritic S (2)	0.02	0.08	0.02	0.05	0.31
Total S (3)	<0.01	0.09	0.02	0.06	0.41
POTENTIAL ACIDITY (APP), In Tons CaCO ₃ /Kt					
Peroxide S	<0.1	<0.1	<0.1	<0.1	6.2
Pyritic S	0.6	2.5	0.6	1.6	9.7
Total S	<0.3	2.8	0.6	1.9	12.8
ACID NEUTRAL. POTENTIAL (ANP), In Tons CaCO ₃ /Kt (4)	7.8	2.4	5.0	2.6	11.8
NET ACID NEUTRAL. POTENTIAL (5)					
Peroxide S	>7.7	>2.3	>4.9	>2.5	5.6
Pyritic S	6.2	-0.1	4.5	1.0	2.1
Total S	>7.4	-0.4	4.4	0.7	-1.0

- (1) Sobek et al., EPA 600/2-78-054, Method 3.2.11
- (2) ASTM D2492, Pyritic S Method
- (3) ASTM D2492 LECO S Method
- (4) Sobek et al., EPA 600/2-78-054, Method 3.2.3
- (5) ANP - APP

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TABLE 7
ACID GENERATION/NEUTRALIZATION POTENTIAL
HEAD ORE; TAILINGS; AND SPENT MILL ORE, DETOXIFIED WITH EITHER SO₂ OR Cl₂

Test	Head Ore LMC ⁽⁶⁾	Head Ore LHC ⁽⁶⁾	Tailings (7)	Detoxified Spent Ore ⁽³⁾			
				Low Grade		High Grade	
				SO ₂	Cl ₂	SO ₂	Cl ₂
SULFUR, IN %							
Peroxide S ⁽¹⁾				0.05	0.06	0.02	0.04
Pyritic S ⁽²⁾			0.22	0.11	0.11	0.11	0.13
Total S ⁽³⁾	0.08	0.24		0.14	0.15	0.12	0.15
POTENTIAL ACIDITY (APP), IN TONS CaCO ₃ /Kt							
Peroxide S				1.6	1.9	0.6	1.2
Pyritic S		7.5	6.9	3.4	3.4	3.4	4.1
Total S	2.4			4.4	4.7	3.8	4.7
ACID NEUTRAL. POTENTIAL (ANP), IN TONS CaCO ₃ /Kt ⁽⁴⁾							
	<0.3	<0.3	<0.3	4.0	3.3	3.3	<0.1
NET ACID NEUTRAL. POTENTIAL ⁽⁵⁾							
Peroxide S				2.4	1.4	2.7	-1.1
Pyritic S		-7.5	-6.9	0.6	-0.1	-0.1	-4.0
Total S	-2.4			2.8	-1.4	-0.5	-4.6

(1) Sobek et al., EPA 600/2-78-054, Method 3.2.11.

(2) ASTM D2492, Pyritic S Method.

(3) ASTM D4239, LECO S Method.

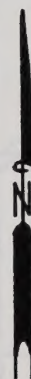
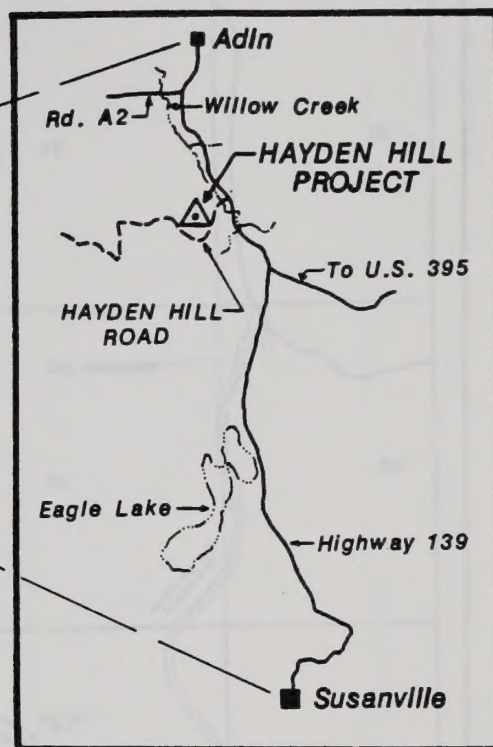
(4) Sobek et al., EPA 600/2-78-054, Method 3.2.3.

(5) ANP - APP.

(6) LMC from Waste Classification Report, Table 5, analyses by CH₂M Hill.(7) Tailings from Report of Waste Discharge, Table 6, processing by Hazen, analyses by CH₂M Hill.

FIGURES

Figure	Location	Area (sq. ft.)	Volume (cu. ft.)	Weight (lb.)	Concentration (ppm)	Notes
1	Area 1	100	100	100	100	
2	Area 2	200	200	200	200	
3	Area 3	300	300	300	300	
4	Area 4	400	400	400	400	
5	Area 5	500	500	500	500	
6	Area 6	600	600	600	600	
7	Area 7	700	700	700	700	
8	Area 8	800	800	800	800	
9	Area 9	900	900	900	900	
10	Area 10	1000	1000	1000	1000	
11	Area 11	1100	1100	1100	1100	
12	Area 12	1200	1200	1200	1200	
13	Area 13	1300	1300	1300	1300	
14	Area 14	1400	1400	1400	1400	
15	Area 15	1500	1500	1500	1500	
16	Area 16	1600	1600	1600	1600	
17	Area 17	1700	1700	1700	1700	
18	Area 18	1800	1800	1800	1800	
19	Area 19	1900	1900	1900	1900	
20	Area 20	2000	2000	2000	2000	
21	Area 21	2100	2100	2100	2100	
22	Area 22	2200	2200	2200	2200	
23	Area 23	2300	2300	2300	2300	
24	Area 24	2400	2400	2400	2400	
25	Area 25	2500	2500	2500	2500	
26	Area 26	2600	2600	2600	2600	
27	Area 27	2700	2700	2700	2700	
28	Area 28	2800	2800	2800	2800	
29	Area 29	2900	2900	2900	2900	
30	Area 30	3000	3000	3000	3000	
31	Area 31	3100	3100	3100	3100	
32	Area 32	3200	3200	3200	3200	
33	Area 33	3300	3300	3300	3300	
34	Area 34	3400	3400	3400	3400	
35	Area 35	3500	3500	3500	3500	
36	Area 36	3600	3600	3600	3600	
37	Area 37	3700	3700	3700	3700	
38	Area 38	3800	3800	3800	3800	
39	Area 39	3900	3900	3900	3900	
40	Area 40	4000	4000	4000	4000	
41	Area 41	4100	4100	4100	4100	
42	Area 42	4200	4200	4200	4200	
43	Area 43	4300	4300	4300	4300	
44	Area 44	4400	4400	4400	4400	
45	Area 45	4500	4500	4500	4500	
46	Area 46	4600	4600	4600	4600	
47	Area 47	4700	4700	4700	4700	
48	Area 48	4800	4800	4800	4800	
49	Area 49	4900	4900	4900	4900	
50	Area 50	5000	5000	5000	5000	
51	Area 51	5100	5100	5100	5100	
52	Area 52	5200	5200	5200	5200	
53	Area 53	5300	5300	5300	5300	
54	Area 54	5400	5400	5400	5400	
55	Area 55	5500	5500	5500	5500	
56	Area 56	5600	5600	5600	5600	
57	Area 57	5700	5700	5700	5700	
58	Area 58	5800	5800	5800	5800	
59	Area 59	5900	5900	5900	5900	
60	Area 60	6000	6000	6000	6000	
61	Area 61	6100	6100	6100	6100	
62	Area 62	6200	6200	6200	6200	
63	Area 63	6300	6300	6300	6300	
64	Area 64	6400	6400	6400	6400	
65	Area 65	6500	6500	6500	6500	
66	Area 66	6600	6600	6600	6600	
67	Area 67	6700	6700	6700	6700	
68	Area 68	6800	6800	6800	6800	
69	Area 69	6900	6900	6900	6900	
70	Area 70	7000	7000	7000	7000	
71	Area 71	7100	7100	7100	7100	
72	Area 72	7200	7200	7200	7200	
73	Area 73	7300	7300	7300	7300	
74	Area 74	7400	7400	7400	7400	
75	Area 75	7500	7500	7500	7500	
76	Area 76	7600	7600	7600	7600	
77	Area 77	7700	7700	7700	7700	
78	Area 78	7800	7800	7800	7800	
79	Area 79	7900	7900	7900	7900	
80	Area 80	8000	8000	8000	8000	
81	Area 81	8100	8100	8100	8100	
82	Area 82	8200	8200	8200	8200	
83	Area 83	8300	8300	8300	8300	
84	Area 84	8400	8400	8400	8400	
85	Area 85	8500	8500	8500	8500	
86	Area 86	8600	8600	8600	8600	
87	Area 87	8700	8700	8700	8700	
88	Area 88	8800	8800	8800	8800	
89	Area 89	8900	8900	8900	8900	
90	Area 90	9000	9000	9000	9000	
91	Area 91	9100	9100	9100	9100	
92	Area 92	9200	9200	9200	9200	
93	Area 93	9300	9300	9300	9300	
94	Area 94	9400	9400	9400	9400	
95	Area 95	9500	9500	9500	9500	
96	Area 96	9600	9600	9600	9600	
97	Area 97	9700	9700	9700	9700	
98	Area 98	9800	9800	9800	9800	
99	Area 99	9900	9900	9900	9900	
100	Area 100	10000	10000	10000	10000	



Denver Knight Pie'sold

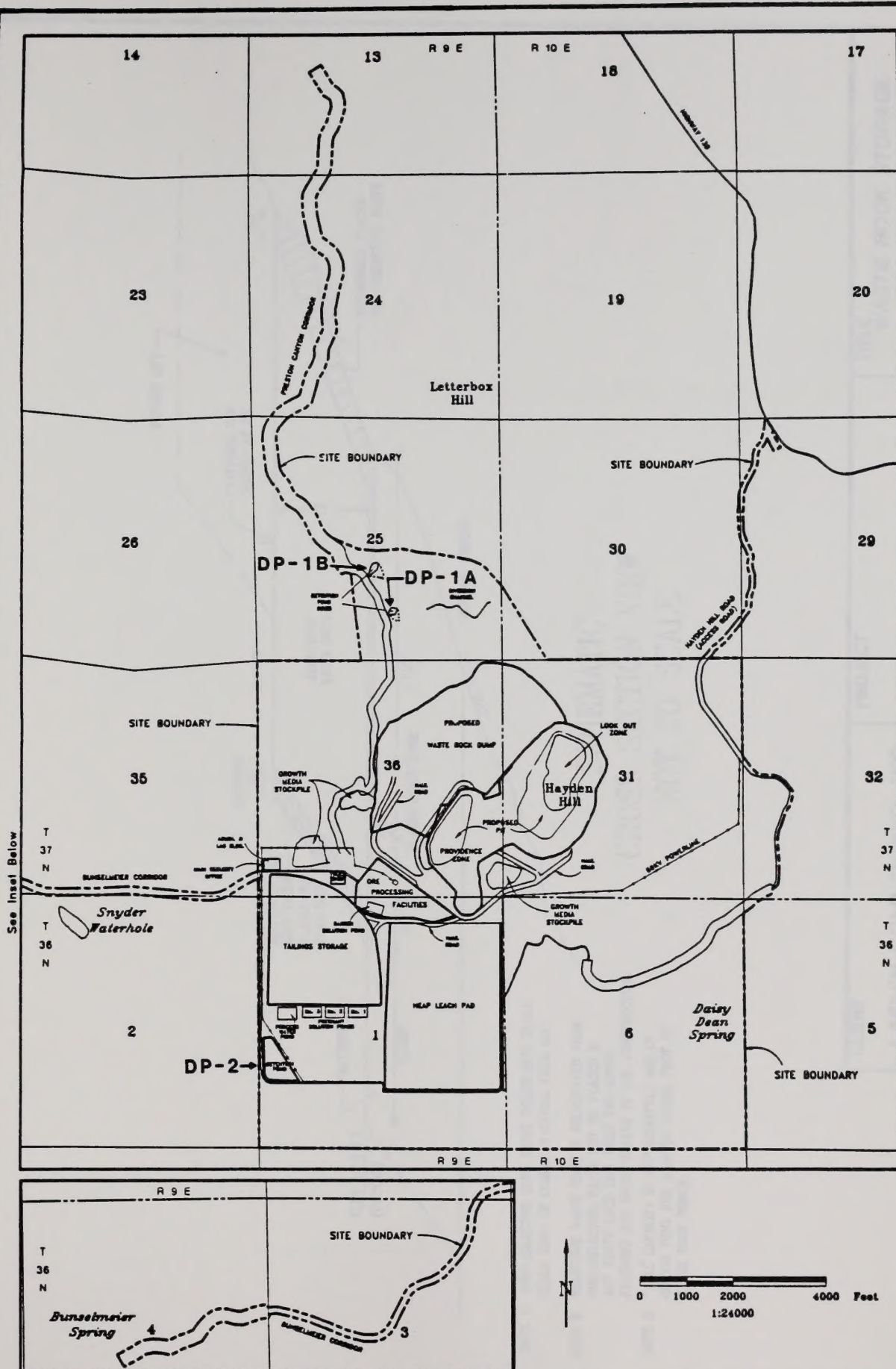
ENVIRONMENTAL CONSULTANTS INC.

LASSEN GOLD MINING, INC.

HAYDEN HILL PROJECT

FIGURE 1

LOCATION MAP



CLIENT

LASSEN GOLD MINING, INC.

Denver Knight Piesold
ENVIRONMENTAL CONSULTANTS INC

PROJECT

HAYDEN HILL PROJECT

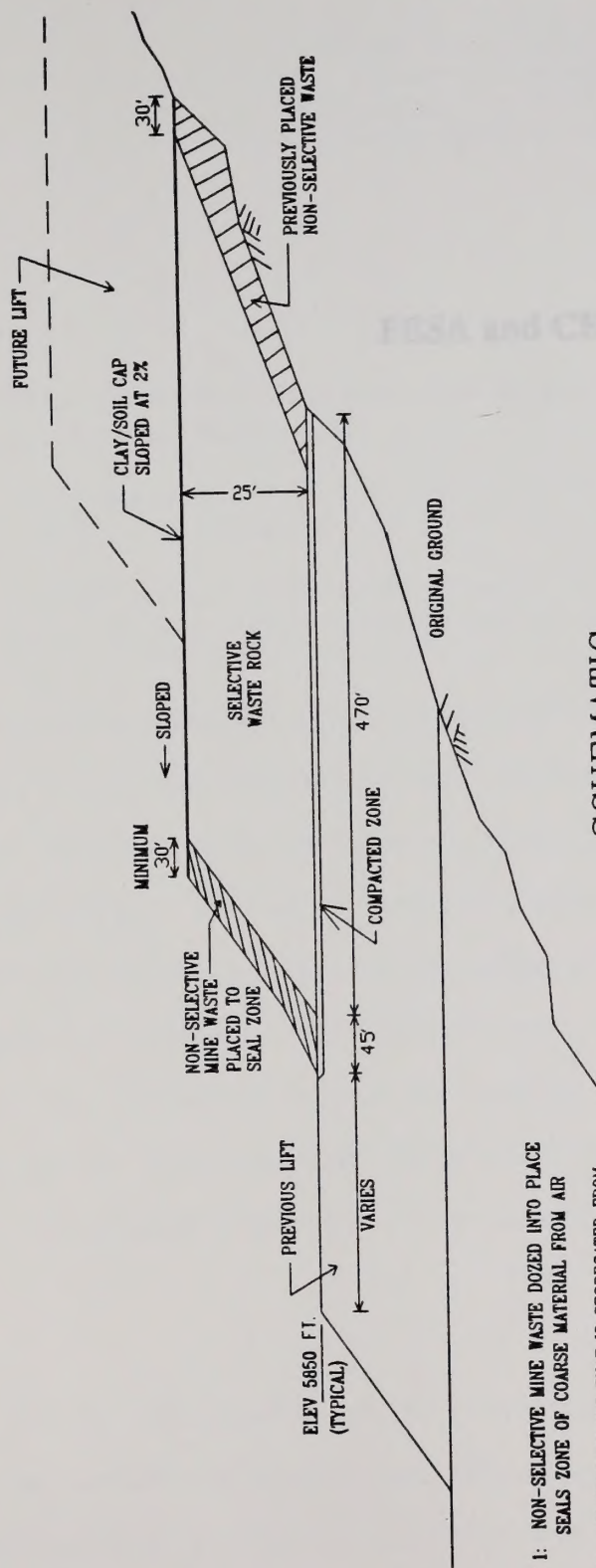
PROJECT N° 1074

TITLE

GENERAL SITE LAYOUT

DATE 04/05/91

FIGURE 2



SCHEMATIC CROSS SECTION VIEW NOT TO SCALE

- NOTE 1:** NON-SELECTIVE MINE WASTE DOZED INTO PLACE
SEALS ZONE OF COARSE MATERIAL FROM AIR
- NOTE 2:** SELECTIVE WASTE THAT IS SEGREGATED FROM
NON-SELECTIVE WASTE MAY BE PLACED IN
ANY WASTE ROCK LIFT WHEN THE ABOVE
FEATURES ARE INCORPORATED IN THE CONSTRUCTION.
- NOTE 3:** *CELL CAPACITY IS APPROXIMATELY 425 CY
OR 750 TONS PER RUNNING LINEAL FOOT OF
WASTE ROCK BENCH.

CLIENT	PROJECT	TITLE
LASSEN GOLD MINING, INC.	HAYDEN HILL	WASTE ROCK STORAGE FOR SELECTIVELY HANDLED MATERIAL
<i>Denver Knight Piesold</i> ENVIRONMENTAL CONSULTANTS INC.	PROJECT NO 1074	DATE 6/27/91
		FIGURE 3

DRAFT

Fish and Wildlife Enhancement
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

September 12, 1991

Memorandum

To: State Director, Bureau of Land Management
Sacramento, California

From: Field Supervisor, Fish and Wildlife Service, Sacramento Field Office
Sacramento, California

Subject: Formal Consultation on the Effects of the Hayden Hill Project on the
Modoc Sucker, the Bald Eagle and the American Peregrine Falcon

This biological opinion was prepared in response to your July 29, 1991, request for formal consultation pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended, on a proposed gold mining operation, the Hayden Hill Project, located in northern Lassen County, California. At issue are the effects of the gold mining operation on the federally listed endangered Modoc sucker (*Catostomus microps*). Although the area affected by the Hayden Hill Project is within the range of the bald eagle and the American peregrine falcon, these species likely will not be affected by the project proposal. Thus neither species will be addressed further in this biological opinion.

Your request for consultation on the potential effects of the Hayden Hill Project was received by our Regional Office on August 6, 1991. This biological opinion is based on available file information, information

exchanged in meetings (particularly on July 31, 1991) and materials we have received from your staff (Biological Assessment for the Hayden Hill Project, Hayden Hill Road/Highway 139 Road Construction Plan, and Emergency Response Plan and Spill Prevention, Control, and Countermeasure Plan).

Biological Opinion

It is our biological opinion that the proposed gold mining operation, the Hayden Hill Project, as described in the Biological Assessment, is not likely to jeopardize the continued existence of the Modoc sucker. Critical habitat has been designated for this fish but will not be affected by this project.

Description of the Proposed Action

A detailed description of all phases of the proposed mining operation is presented in the Draft EIR/EIS for the Hayden Hill Project (1991). The Biological Assessment (1991) for the Hayden Hill Project presents a condensed description of the project. Briefly, the project consists of a proposal to mine two adjacent ore zones within one open pit mine. The ore will be removed, stacked, and leached with a cyanide solution. The operation will use 1,000 gallon per minute of water pumped from the aquifers in Preston Canyon and the Bunselmeier Spring area. The Hayden Hill Road off State Route 139 will be upgraded for access to the site. Approximately 950 acres will be directly impacted by the gold mine. The mine will have a life of approximately 8 years and monitoring of the site for adverse affects to the

environment and to surface and groundwater will be continuous and will extend 10 years after the mine has closed. Reclamation of the site has been designed for semi-arid climate and local soil conditions but restoration to pre-project natural communities is unlikely.

The project proponent has incorporated measures to reduce the adverse effects of the project on the Modoc Sucker. These measures are identified in the BA and include timing restriction, sediment reduction, and a culvert design to prevent blockage of fish passage, and a series of ^{project} designs and monitoring programs to alleviate ~~any~~ toxic contamination problems.

Environmental Baseline/Special Account

The Hayden Hills Project is located in northern Lassen County on the western edge of the Modoc Plateau and is bordered on the east by the Basin and Range Province, on the south by the Sierra Nevada, on the north by the Cascade Range. The project site falls in the Upper Montane-Lower Northern Coniferous Forest ecological zone and vegetation communities consist of Low Sagebrush/Grassland, Upland Shrub, and Jeffrey Pine/Mountain Shrub. Activities in the area consist of grazing, logging, and post mining activities. These uses have all contributed to degradation of habitat especially in riparian corridors along the major water courses such as Preston Canyon and Willow Creek. Recreation activities consist mainly of hunting and limited tourism.

Willow Creek, the only perennial stream on the project site and a subdrainage of the larger Ash Creek system, is 11 miles long and changes in elevation

almost 1,000 feet from the lower to the upper end. The stream consists of pools, runs, riffles and some high gradient areas with plunge basins. Generally, the substrate is sand and/or gravel with some areas of finer material (silt) and some very rocky.

Willow Creek contains a small population of Modoc suckers. The size of the population has been small since data was first collected in 1977 and has generally experienced a downward trend since that time, presumably because of long term habitat damage (from livestock grazing) and the prolonged drought in the late 1980's. Willow Creek could support a larger population of Modoc suckers if habitat improvement projects could be implemented. The Forest Service has already implemented some projects to improve the habitat along the upper reaches of Willow Creek. No survey work for the Modoc sucker for the Hayden Hill Project was allowed in 1990 or 1991 because of the extremely low population numbers and the fear that electro-fishing could inadvertently cause a loss of fish. The project proponents, however, have designed their activities that affect Willow Creek as if there were a viable population of suckers present.

Effects of the Action

Effects on the Modoc sucker from the Hayden Hill Project could occur directly in Willow Creek or indirectly through activities in the Preston Canyon or Indian Springs subdrainages.

Willow Creek will be directly impacted by the widening of Hayden Hill Road at the intersection with State Route 139 and the extension of the existing culvert at the Willow Creek crossing from 40 to 100 feet in length. Sediment will be reduced by doing the construction at low run off periods and by installing temporary sediment detention facilities. To prevent long term deleterious effects, approaches to the culvert will be protected by double rows of gabions set into the banks. The new 60 foot extension of the culvert will be the arched, open bottom type and will permanently cover 60 feet of run/riffle habitat. Placement of the culvert and gabions will induce some relatively short term sedimentation effects in to the stream.

In the Indian Springs subdrainage the upgrading of the Hayden Hill Road will be done by making road cuts as far from the drainage as possible and having the road surface slope into the hillside. Berms will be built on the outside of the roadway and will divert runoff to culverts placed at proper locations. All runoff from the culverts will be diverted to sediment detention basins outside the drainage. The culverts will have emergency closures to help contain spillage of materials on the roadway. There will be little if any increased sediment into Modoc sucker habitat from this activity in the Indian Springs subdrainage.

A major portion of the gold mining operation is in the Preston Canyon subdrainage. Essentially, the entire pit and waste rock dump are located in this area. Sediment control facilities at the waste rock area will limit the amount of material leaving the site (design criteria are for a 1,000 year, 24 hour event) and will catch run off two in sediment basins further down drainage. Any acid producing rock excavated from the pit will be given

special treatment. Groundwater monitoring wells have been placed near the waste rock dump to facilitate testing for any acid rock drainage.

Cumulative watershed impacts of sediments from the proposed mining operation on the 5,300 acre Preston Canyon and the 4,175 acre Indian Springs subdrainages expressed in ERAs (equivalent roaded areas) are less than the threshold of concern for sediment loading. Overall "the magnitude of difference in run-off and sediment induced by mining and baseline conditions is less than five percent in terms of cumulative impacts to the Willow Creek drainage" (Biological Assessment, 1991).

Several toxic materials such as diesel fuel, lime, sodium cyanide, hydrochloric acid, caustic soda, and gasoline will be transported to the mine site. There is a potential for some of this material to be spilled onto Highway 139 or the Hayden Hill Road and end up in Willow Creek. Accidental releases of this material could be catastrophic but this is considered unlikely. Regardless, an emergency field procedures manual has been prepared for the protection of the environment, including Willow Creek. Lassen Gold Mining, Inc. (LGMI), assures that "field procedures for response for spills will be thoroughly exercised on a regular schedule to maintain a competent recovery team" (Biological Assessment, 1991). In addition, the most hazardous materials will be transported as much as possible when flows are low in the various drainages.

Because of the sediment control features that have been worked into the project design (see the Draft EIR/EIS and the Biological Assessment) and the planning that has taken place and will continue to take place to control toxic

material spills, the Service concludes that the proposed project will not appreciably reduce the likelihood of the Modoc sucker to survive and recover.

Cumulative Effects

Cumulative effects are those effects of future non-federal (State, local governments, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultations. Future Federal actions are subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative to the proposed action.

There are no known State or local agency activities in the proposed project site that have not been considered in this biological opinion (i.e., the State Route 139 interchange with the Hayden Hill Road). Private landowners have indicated to BLM (Biological Assessment, 1991) that they have no intention of changing their uses of their lands at this time. Therefore, there are no known cumulative impacts to analyze.

Incidental Take

Section 9 of the Act, as amended, prohibits any take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without special exemption. Harm is defined to include significant habitat modification or

degradation that results in death or injury to listed species by significantly impairing behavioral patterns as breeding, feeding, or sheltering. Under the terms of Section 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with this incidental take statement. The measures below are non-discretionary, and must be undertaken by the agency or included in any authorizations, as appropriated.

The Service anticipates that incidental take attributable to the proposed Hayden Hills Project could result during the enlargement of the crossing of Willow Creek by the Hayden Hill Road. The widening of this crossing will entail the placement of an additional 60 feet of culvert and the installation of gabions on the approaches to the culvert. This construction will take place directly in the stream channel and the potential exists for the direct take of Modoc suckers or take by harming or harassing. It is also possible that take could occur during the accidental release of toxic material on the roadway near Willow Creek that might gain access to the Creek and cause the death of any Modoc suckers in the vicinity.

The Service anticipates that incidental take attributable to activities associated with the widening of and culvert placement on Hayden Hill Road to be no more than 2 Modoc suckers. The Service anticipates incidental take associated with the release of toxic material over the 8 year length of the mining activities to be 5 Modoc suckers. The following reasonable and prudent measures are necessary and appropriate to minimize the potential for incidental take of Modoc suckers.

- 1) Reduce the likelihood of take at the culvert placement and road widening site.
- 2) Reduce the likelihood that accidental spills of toxic materials will gain access to Willow Creek.
- 3) Reduce the likelihood that slow accumulation of toxic materials on roadway, parking lots and other work areas will gain access to Willow Creek or any of the subdrainages to Willow Creek such as Preston Canyon and Indian Springs.

In order to be exempt from the prohibitions of Section 9 of the Act, the Bureau (or project proponent) is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

The following terms and conditions implement reasonable and prudent measure 1:

- 1) Begin and complete the construction activity during the low flow period. This period is generally between mid-June to mid-October but should cease at the advent of the first major (more than 1") precipitation event in the fall.
- 2) Remove by seining, any fish that are living in the immediate vicinity of the construction activity and for 500 feet down stream, and place them in permanent habitat further downstream in Willow Creek.

- 3) Put into position any necessary temporary sediment trapping devices prior to initiation of construction activity.

The following terms and conditions implement reasonable and prudent measure 2:

- 1) Adhere to spill containment procedures developed by LGMI (Appendix B of the Biological Assessment) in case of accidental spill of toxic materials.
- 2) As much as possible, transport the most hazardous material to the project site during periods of low flow in Willow Creek.
- 3) Limit speed of project vehicles to 25 m.p.h. on the Hayden Hill Road. This should significantly lessen the probability for catastrophic spill of toxic materials.

The following terms and conditions implement reasonable and prudent measure 3:

- 1) Monitor berms, culverts and drainage channels to retention ponds and maintain in proper condition so that any toxic materials that slowly accumulate on parking and other work areas do not wash into Willow Creek or any of its sub drainages.
- 2) Develop and conduct an employee training program on the need to treat the environmentally sensitive areas with their endangered species with particular care.

The Service is to be notified within three (3) working days of the finding of any Modoc suckers found dead or injured in the Hayden Hills Project area. The contact person is Mr. Wayne White (916) 978-4613 or FTS 460-4613. Any specimens will be turned into the California Department of Fish and Game. The agency contact is Ms. Carla Markman (916) 355-7114.

If during the course of the action, the amount or extent of the incidental take limit is exceeded, the Federal Agency must reinitiate consultation with the Service immediately.

Conservation Recommendations

- 1). For all acreages in all subdrainage of the Willow Creek system and Willow Creek itself under the control of LGMI, cattle grazing should be kept to a minimum to allow for recovery of the ecosystem that should reduce sedimentation in Willow Creek.
- 2). Riparian areas in the subdrainages and in Willow Creek under the control of LGMI should be fenced and totally protected from cattle grazing to allow for the recovery of the riparian vegetation that would shade the stream courses and improve habitat for the Modoc sucker.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

This concludes formal consultation on the Hayden Hill project. Reinitiation of consultation is required if the amount or extent of incidental take, as previously described, is exceeded, if new information reveals effects of the action that may affect listed species or critical habitat in a manner that was not considered in this opinion, and/or if a new species or critical habitat is designated that may be affected by the action. If you have any questions regarding this opinion, please contact Gail C. Kobetich of my staff at (916) 978-4866 or FTS 460-4866.

cc: Carla Markman, California Department of Fish and Game Inland Fisheries Division, 1701 Nimbus Road, Suite C, Rancho Cordova, California 95670

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BIOLOGICAL ASSESSMENT OF THE HAYDEN HILL PROJECT

Potential Effects of Proposed Activities

on Greater Sandhill Cranes (Grus canadensis tabida) [Threatened]

Prepared for: Lassen Gold Mining, Inc., Lassen County Planning Department, and California Department of Fish and Game

Prepared by: Lynn Sharp, Environmental Consultant (Certified Wildlife Biologist), 10906 SE 54th Place, Milwaukie, OR 97222

INTRODUCTION

This report is an assessment of the probable impact on greater sandhill cranes of the proposed Hayden Hill gold mining operation. The proposed Project is located at Hayden Hill in Lassen County, California. The report is being prepared as part of the CEQA process. A Draft EIR/EIS on the Hayden Hill Project (Steffen, Robertson and Kirsten 1991) was circulated for public review in April of 1991.

PROJECT DESCRIPTION

The proposed Hayden Hill Project is an open pit gold and silver mining and processing operation. Conventional open-pit mining methods to be used will include drilling, blasting, and a truck/loader operation to extract ore and remove overburden and waste rock. Depending on its grade, the ore will be processed in the mill or on heap leach pads. A large lined impoundment designed for zero-discharge will receive the mill tailings. Ponds containing cyanide levels toxic to wildlife will be covered with 1-inch mesh netting to prevent wildlife access. Solution ponds will be fenced with either chain link or polyethylene netting with 1-inch mesh. The tailings solution will be neutralized to a non-lethal level to prevent wildlife mortality. Waste rock will be disposed of on the north side of Hayden Hill. An existing access road will be substantially upgraded. A new transmission line will be constructed to a substation 17 miles to the north to provide electrical power for the project. A total of 970 acres of land will be directly affected by the project. The life of the mine is estimated to be 8 years. A schematic of the proposed project and showing locations of existing wetlands in the vicinity is provided in Figure 1. Additional details are provided in the Hayden Hill EIR/EIS (Steffen, Robertson and Kirsten 1991).

SANDHILL CRANE STATUS IN THE PROJECT VICINITY

Two subspecies of sandhill crane occur in California: the lesser sandhill crane (Grus canadensis canadensis), which winters in numbers of about 25,000 in California; and a population of between 3,400 and 6,000 greater sandhills (Grus canadensis tabida). The greater sandhills include birds from the northwest, north, and east as well as birds from other parts of California (California Department of Fish and Game 1990). The California nesting population is in the range of 200-250 birds in the northeastern part of the State (Littlefield 1981, 1989; California Department of Fish and Game 1991). The greater sandhill crane is classified as Threatened in California (California Department of Fish and Game 1991).

The nesting sandhill crane population of Lassen County was estimated to be 75 pairs of birds in 1989. Nesting populations in the region were as follows that year: 165 pairs in Modoc County, 27 pairs in Siskiyou County, 7 pairs in Plumas County, 1 pair each in Shasta and Sierra Counties (California Department of Fish and Game 1990). The nesting sandhill population in northern California appears to have increased according to CDFG data from 1982 and 1989. Greater sandhill cranes nest widely throughout northern California, Nevada, central and eastern Oregon and eastward, and into southern Canada.

Sandhills nest on elevated mounds of (usually emergent) vegetation which they construct in marshy areas from the previous year's residual vegetation (Ryser 1985). California sandhill cranes apparently tend to nest in rather open habitat but will also nest in dense bulrush and burreed stands. Nesting territories must include moist soil to provide invertebrate food sources for hatchlings. Cranes move to grain fields and other favorable sites after fledging (Littlefield 1989, California Department of Fish and Game 1990).

Field surveys for sage grouse during August of 1990 included observations of a pair of sandhill cranes near the stock pond in the northeast quarter of Section 11 by Lynn Sharp, Val Grant, Jeff White, and Bob Eng in August of 1990. A second pair was also heard calling simultaneously from the area west of Silva Flat reservoir. Cranes were not observed during the spring surveys for sage grouse in 1990, but were observed once in the same stock pond in the northeast quarter of Section 11 in April of 1991 by Bio-Resources during sage grouse surveys. Cranes were not observed, however, during late July field studies by Bio-Resources (Grant, pers. comm. 1991), during earlier field visits by Jeff White of LGMI, or by archeologists conducting surveys of the area. The terrain and vegetation in the area is very open and if a pair of cranes were present in the pond in Section 11 they would have been detected. Thus, the observations to date do not permit definitive conclusions to be made about the residency and nesting status of sandhill cranes in the vicinity of the proposed mine. Sandhill crane pairs do return to their home ranges annually, but in years with poor habitat conditions they do not attempt to nest (Littlefield 1989). Conditions in 1991, however, were excellent.

It appears, on the basis of the observations, that if a pair is resident during the summer, their home range includes but is not centered on the pond in Section 11 where they have been observed on only two instances out of numerous visits by persons capable of identifying sandhill cranes. Existing potential nesting habitat for sandhill cranes in the immediate vicinity of the Project historically has been relatively poor owing to overgrazing of wetlands and a limited amount of suitable habitat overall. Given the distribution of potential suitable habitat, the focus of this home range is most likely to the west, farther away from the zone of influence of the Project.

POSSIBLE EFFECTS OF PROJECT

Sandhill cranes are not expected to be adversely affected by the Hayden Hill project for several reasons. First, the observations to date do not indicate that the potential habitat that will be affected by the project is important to local sandhill cranes. Less than 1 acre of natural wetland habitat and existing detention ponds totalling about 5 acres will be lost to the Project. None of this could be described as good crane nesting habitat. Sandhill cranes adapt to adjacent construction disturbance as long as their habitat quality does not decline (Sharp pers. obs.).

The netting or neutralization of ponds will prevent cranes from having access to toxic solutions. The chain link fence proposed around some mining facilities will be visible to and avoided by cranes. If additional barbed wire fences are installed as part of the mitigation program, these could pose a hazard to cranes. These fences are much less visible than chain link and cranes do suffer mortality in fences at other locations in California and other states. The lack of vegetation and construction activity is expected to contribute to the lack of attractive features to cranes at the tailings impoundment during the life of the mine.

Exclusion of cattle from potential crane nesting habitat during the nesting season (April through August) will provide nesting adults and newly hatched cranes safety from trampling and grazing. Any grazing of wetland areas and wetland periphery will be by prescription prepared in consultation with CDFG. Fall grazing will be limited so that nesting cover for the following spring is maintained.

Sandhills are expected to benefit over the short- and long-term from the habitat improvement which

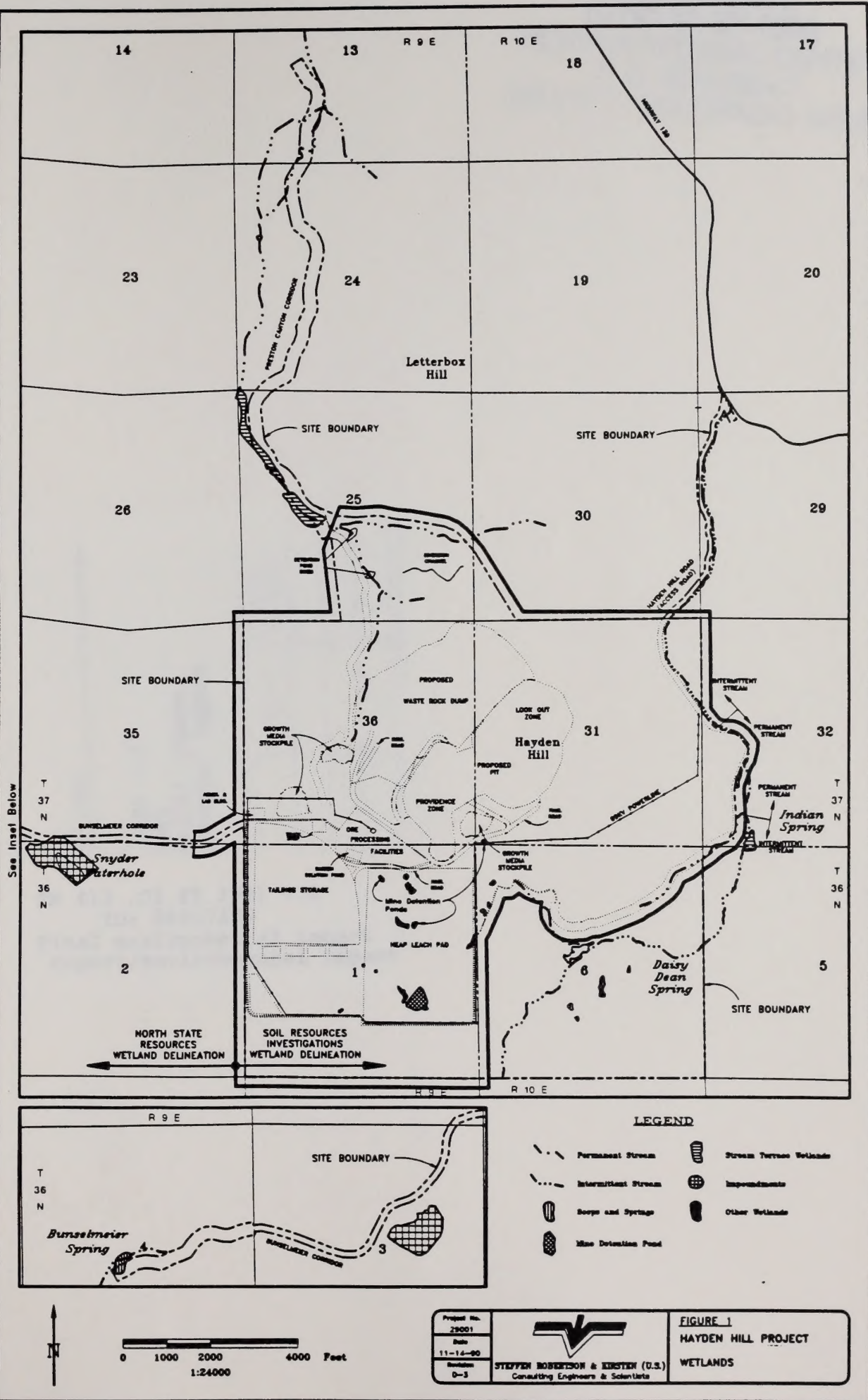
will take place with implementation of the wetland mitigation plan (Huffman and Associates, Inc. 1991), which will enhance existing wetlands through management and create approximately 19 acres of new wetlands in Section 2, west of the Project area.

SUMMARY

- o Potential nesting habitat affected by the proposed Hayden Hill Project is marginal and does not appear to be consistently used by sandhill cranes.
- o Project design features preclude crane access to toxic solutions.
- o Planned habitat enhancements and wetland creation will significantly improve habitat values in the area.
- o Crane injury or mortality due to project operation is unlikely.
- o With planned mitigation measures and project design features, the Hayden Hill Project is not likely to adversely affect greater sandhill cranes and will result in overall habitat improvement.

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 Date 11-14-90
 Revision 0-3
STEVEN ROBERTSON & KIRSTEN (U.S.)
 Consulting Engineers & Scientists
FIGURE 1
HAYDEN HILL PROJECT
WETLANDS

BLM LIBRARY
BLDG 50, ST-150A
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, COLORADO 80225

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